University of Alberta

How can Canadian graduate orthodontic programs better prepare their newly graduated orthodontists for the business challenges of orthodontic practice: An exploratory survey of Canadian orthodontists

by

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Abstract

An anonymous online survey of Canadian orthodontists was used to evaluate orthodontic practice management related background, training, needs and practices. Program directors of Canadian graduate orthodontic programs were contacted for details regarding their program's educational opportunities in practice management.

The survey response rate was 19% (136/713). Four out of five program directors responded.

The majority of survey respondents expressed an opinion that their graduate program's business exposure was insufficient, and more structured training would have been preferable.

A structured course in practice management may best be contained within current program lengths, or with a short program length extension. Room for additional teaching time may be made in orthodontic programs by way of internal restructuring including reallocation of free time, research time and other didactic exposure, however respondent's here did not feel a reduction in clinical exposure to make room for a structured practice management course was acceptable.

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On a very personal note, I wish to express my deepest love and gratitude to my husband Bryan and mother Lynn for always being there, supporting me unconditionally through trying times, and making it possible for me to bring our wonderful son Toryn into the world without interrupting my educational process and disrupting the program flow. Toryn and the new baby we are currently expecting are the greatest gifts I could ever receive.

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List of Abbreviations and Symbols

Abbreviation	Meaning
χ^2	Chi-square
CDAC	Commission of Dental Accreditation of Canada
CE	Continuing Education
DVM	Doctor of Veterinary Medicine
JCO	Journal of Clinical Orthodontics
MBA	Master of Business Administration
MSc	Master of Science
NDEB	National Dental Examining Board of Canada
SD	Standard deviation
TQM	Total quality management
US	United States
USC	University of Southern California

Chapter One

Introduction and Literature Review

1.1 – Background

A search of the orthodontic literature reveals numerous commentaries, debates and discussions surrounding aspects of the present state of, and trends in, orthodontics education and orthodontics as a profession. Common themes of concern to authors in these areas include the influence of commercialism on orthodontic education and the profession, practice and business ethics, loss of professionalism, the importance of systems in orthodontic practice management, the lack of preparedness of new orthodontists for the business challenges of practice, faculty shortages, and quality management. Unfortunately, there are a very few actual studies supporting these authors concerns, and their articles tend to be anecdotal and opinion-based.

Leaving an associate dentist career behind to pursue a new career as an orthodontic specialist, this author recognized her own deficiencies in practice management-related training in areas including basic business knowledge, staff management, communication and practice organization. This author remembered first-hand how these deficiencies affected her time in the practice of general dentistry, and was motivated to understand if orthodontists, dentists and other healthcare professions noticed the effect of some of these deficiencies in traditional educational experiences and if there was a need for, or trend toward change.

1.2 – Post Graduate Orthodontic Education

A standard national practice management curriculum for orthodontists in training does not exist in Canada, and there are no specific requirements in this area for program accreditation(1). Both ethics and practice management topics appear on the Commission of Dental Accreditation of Canada's (CDAC) list of necessary knowledge, and a statement is made that graduates must be proficient to practice orthodontics in full compliance with accepted standards of ethical behavior, however no further guidelines in this area are provided.

None of the five Canadian graduate orthodontic training programs active in 2009 provide their graduates with a formal course on practice management or related business topics. Some American programs do provide such courses. In fact, according to the orthodontic graduate education survey 1983-2000(2), 82% of responding programs offered such a curriculum, up from 63% in 1983. The best documented of such curricula in the literature are the courses offered by the University of Southern California (USC), and the spearheads of the implementation of this curricula observe that practice

management principles should be taught to orthodontic residents in graduate school in order to prevent bad habits from developing, and problems from occurring in practice.(3)

Significant barriers to implementation of formal practice management courses within the parameters of current orthodontic programs include limitations in both the time in which to sufficiently teach the necessary skills, and the resources to do so.(3) The problem of ever increasing time pressures on programs to teach all that residents must learn within the time available is prominent in the literature. An important part of the solution is for educational programs themselves to get smarter and learn to adapt to these increasing pressures by finding more accurate, concise and timely means of communicating must-know educational components to their students.(4)

1.3 - Orthodontic Practice Management

One of the greatest sources of job dissatisfaction among Canadian orthodontists has been reported to be practice management.(5) The literature uses the phrase "practice management" freely and for purposes of consistency, a definition of this phrase was sought. For this paper, orthodontic practice management is identified as: "managing the financial, personnel, marketing, policy and patient management systems effectively and efficiently with a synergistic team to provide quality care and service to patients".(6)

From this definition it can be seen that "practice management" is a complex and multidimensional topic surrounding the structure and function of the orthodontic business. It is important to recall that private practice orthodontics is, in fact, a business. The business decisions made early in a career may impact the future structure, functionality and profitability of the practice for years to come. Statistics Canada cites poor planning and poor management as two major sources of early small business failure (www.ic.gc.ca/sbstatistics). Costly mistakes may be made if the pursuit of business knowledge if the organized and intentional development of practice management skills and abilities is not realized prior to the commencement of orthodontic practice.(3,6)

1.4 - Past research in orthodontics

There are very few published studies addressing areas related to the business of orthodontics. One of the most well known ones is the biennial survey of orthodontic practice conducted by the Journal of Clinical Orthodontics (JCO) since 1981. The latest study, conducted in 2009, summarizes new data and notes trends in relation to previous data in a four-part report.(7-10) Many facets of orthodontic practice are investigated and

discussed in this study, including areas pertaining to practice management and educational background of orthodontists. The study identifies a strong trend toward the increasing use of written practice management methods and systems and an association between the use of such tools and greater case-starts. Additionally, practice building methods and marketing were used more by higher income earners and overall were used more in recent years. This study has a repeatedly low response rate, but it is strengthened by its consecutive reporting and comparisons over multiple decades. In relation to practice management in orthodontics, this study sheds some light on the role that office systems and marketing methods may have in orthodontic practice success.

A study of the characteristics of financially successful orthodontists identified traits common to successful orthodontic practitioners.(11) Such practitioners allowed for practice growth only if it increased net income, viewed overhead control as a key business principle, emphasized staff competence as influencing practice success, and believed in marketing. This study also revealed that the majority of orthodontists follow a budget, and pointed out that this practice is critical in today's business environment. The authors propose that implementation of some of these ways of thinking or practicing could have a significant effect on the success of an orthodontic business.

An exploratory study of the professional development needs of orthodontists was conducted and reported in dissertation form in 2001.(6) The study identified essential knowledge, skills and abilities needed for successful orthodontic practice and identified specific practice management challenges and specific learning needs of orthodontists. The three most critical categories of knowledge, skills and abilities found to be essential for orthodontic practice were leadership, staff management and communication. Five other categories identified as important, though less critical, were practice promotion, education, planning, accounting and quality care.(6)

A study assessing quality measures in orthodontic practice was conducted and reported in dissertation form in 2000.(12) With the intention of exploring the level of quality control via systematic processes employed within orthodontic practices, the study found that only the beginnings of systematic approaches existed, leaving a strong tendency or orthodontic practices to react to problems rather than to develop and implement process for general improvement. There is room within the practice of orthodontics for the development and implementation of quality control systems and processes that can affect all levels of the business, and that are set up to ensure the

delivery of quality care and customer service that patients are demanding in a profitable and sustainable manner.(12)

1.5 - Past research in other areas of dentistry

Similarly as in orthodontics, the responsibility for providing both quality care and effective business management of the private dental practice often falls to the same person – the dentist owner.(13)

A study of the opinions of general dentistry practice management teachers on important business, economic and management topics for inclusion in a practice management curriculum for dental students was conducted.(14) It found ethics, people management, development of interpersonal skills, understanding employment options and overhead control to be the highest ranked in importance. These same teachers also ranked venues for the most effective teaching of practice administration topics to dentists, and dental schools themselves and independent consultants were the most highly ranked. Business schools and government agencies such as small business development centers were ranked lowest of the options.(14)

An inquiry into practice management concerns for periodontists found the biggest challenges in managing a periodontal practice to be in the area of people management, specifically staff recruitment, retention and motivation, and periodontists see problems with communication within and between practice teams. Periodontists also want more practice management information and they need help effectively marketing their practices. Overall, this study found that practice management is both difficult to examine, and proves challenging to periodontal practictioners, with staffing and marketing matters being the most problematic.(13)

1.6 - What other health professions are doing

Veterinary medicine is the most prominent of the healthcare professions in the literature both in terms of studies identifying the need for improved business skills(15,16) and in terms of the development(15-19) and implementation and review of new curriculums for training veterinarians in both general business and in veterinary practice management.(20) The veterinary profession recognized that their future success depended upon their ability to respond to society's changing needs and expectations, and the professions ability to adapt to meet these needs.(16) Programs to better prepare

veterinarians for business practice have been implemented into some schools and continue to be evaluated, modified and adapted.(20)

There is also a large volume of literature discussing aspects of business of medicine education and curricula. A general consensus that medical doctors also are insufficiently prepared for the business of medicine exists.(21-24) A recent systematic review of medical literature in search of implementation reports of practice management related curricula revealed many articles related to various levels of practice management topic implementation. The medical profession recognizes that it is a challenging endeavor to maintain an up to date practice management curriculum that that can adapt to changeable environmental factors and provide physicians with the most appropriate skill set.(21)

1.7 - Risks to professionalism

There is a perceived "culture clash" between healthcare and business that must first be recognized and addressed before any healthcare profession as a whole can hope to gain support for curricular changes intended to significantly increase the practice management component of healthcare education.(18) Opponents of giving additional attention to the business education of orthodontists often cite commercialism, capitalism and greed as the dangers of a focus on business practices, fearing that a business-minded approach to practice may overtake the science and professionalism of orthodontics.(25)

The dental profession is divided in opinion about the effect that additional business training may have on the profession.(25) There are fears that business decisions to improve financial gain will conflict with professionalism and put the trust-based profession at risk.(25) Proponents of improved business education argue that earning a good living adhering while to our professional code of ethics and tending to the needs of the patient over those of the doctor are not mutually exclusive, and a prosperous practitioner may in fact be more effective overall as their own needs are being met as well. Though following the code of ethics for our profession is essential, adherence to these codes does not change the competitive and financially risky environment of real world dentistry. The point of dental education has been claimed to be to produce dentists "educated to succeed in today's competitive workplace environment".(25) Intuitively, clinical competence and scientific knowledge alone cannot be enough to prepare dentists for the challenges of the business of practicing any aspect of dentistry in today's society.

"Commercialism is pervasive, rising, and multifactorial" in the dental profession in the US according to participants of the 2006 Ethics Summit on Commercialism in Dentistry.(26) There was opinion that the profession of dentistry "is being fragmented by unhealthy financial concerns", and though the necessity of a financial component of dentistry was acknowledged, participants pointed out that it must not be allowed to be a driving force and the dental profession must always protect the relationship of trust between dentists and patients.(26) The danger in commercialization of healthcare professions stems not from use of business-based management tools, but from its core ideology of self-interest.(27)

The responsibility to counteract commercial pressures on the dental profession largely falls on organized dentistry leadership, and ethically sound education in dental schools.(26) General and specialty programs in dental education are in a unique position to equip the profession to manage problem of commercialization of our profession. Ignoring the pivotal role of business conduct in the practice of dentistry and releasing new grads, without a solid foundation, to navigate these un-chartered waters under the weight of heavy student dept and the influence of the commercial pressures discussed above is akin to opening a door to welcome the bold stranger of commercialism in. The responsibility for evaluating educational content rests with each student or professional(28), however just as with evaluation of scientific information, new professionals must be competent to evaluate all aspects of the career related information available.

1.8 - Statement of the problem

Few studies have been done to evaluate the business needs of orthodontists, and to date no studies have been done to determine if Canadian graduate orthodontic programs are adequately preparing their students to be successful business managers. It is important that Canadian graduate orthodontic programs be prepared to evaluate and modify their business training curriculum as needed. In our ever-evolving profession and in today's demanding business environment, it is timely to delve into the practice management educational needs of orthodontists and to make suggestions for improving new orthodontist's preparedness for the challenges of business and practice. Additionally, due to limitations on time to teach in programs, it is essential to identify key subject areas and efficient teaching methods.(14) No national standards exist even though the CDAC recognizes that both ethics and practice management knowledge and

skills are important for orthodontists. One reason for this is we currently know very little about how, when and what to teach beginning practitioners in these areas.

1.9 - Objectives

Understanding what should be common knowledge for aspiring orthodontists will allow for evaluation of orthodontic program performance. Continual evaluation and modification of educational programs is important to ensure both the programs and their students thrive.(4) The objectives of this investigation were:

1. To qualify the current level of business and practice management exposure in Canadian graduate orthodontic programs by way of direct contact with program directors.
2. To identify challenging and stressful areas of practice and relate to perceived adequacy of business training
3. To identify business and practice management topics critical for orthodontic practice success.
4. To identify orthodontists' current sources of practice management information
5. To identify some of the potential financial consequences related to perceptions of inadequate business training.
6. To quantify the impact that practice management background has on business related decision making early and later on in an orthodontic career.
7. To identify areas of deficiency in the business-related exposure currently provided by graduate orthodontic programs.
8. To make key curriculum recommendations to Canadian graduate orthodontic programs.

1.10 - Research questions

Research Question # 1 **-** Do graduate orthodontic education programs adequately prepare new orthodontists for the business of orthodontics?

(Relates to objectives 1, 3, and 7)

Research Question #2 – How does the perceived adequacy of business background relate to the amount stress experienced in the early years of practice?

(Relates to objective 2)

Research Question #3 – How does the perceived adequacy of business background relate to the proportion of focus on pursuing business continuing education opportunities in the early years of practice?
(Relates to objectives 4 and 6)
Research Question #4 - How does the perceived adequacy of business background relate to new orthodontists making less sound initial business decisions that have future consequences?
(Relates to objectives 5 and 6)
Research Question #5 - What are the business areas that are most important to orthodontic practice according to experienced orthodontists?
(Relates to objectives 3 and 8)

1.11 – The chapters to follow

In the following chapters, the above research objectives and questions guide the report of the research methods and findings. A survey of Canadian orthodontists is described as the main study tool in this investigation and it was designed to gather business background and practice information from practicing orthodontists.

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Chapter Two

The Impact of Orthodontists' Past Business Management Exposure On Early Orthodontic Practice

2.1 - Introduction

Orthodontic practice involves a melding of art, science and business knowledge and skills. Though graduate orthodontic programs inarguably include thorough coverage of the art and science aspects, the business aspects are inconsistently included.

There are no specific requirements for practice management education in Canadian graduate orthodontic programs and no studies have been conducted to evaluate the preparedness of orthodontists for the business aspects of their practice. There is, however, a strong opinion in the literature that orthodontists and other healthcare professionals are not being adequately trained for the business of practice,(1-4) and while the consequences of this are not entirely known, studies have found business and practice management are a source of stress and dissatisfaction for orthodontists.(5,6)

A questionnaire was used to investigate the past business management training and exposures Canadian orthodontists have undergone, whether that training was sufficient to prepare them for the business challenges of early orthodontic practice, and how that exposure impacted the amount and sources of practice-related stress experienced. The answers to a combination of two questions summed up as "did you get enough business management exposure in graduate school?" and "would you have wanted more exposure in graduate school" were used as indicators of the overall adequacy of respondent's business management background provided by their graduate orthodontic programs.

The objectives of this portion of the study were to quantify the current level of business and practice management exposure in Canadian graduate orthodontic programs, and to identify challenging and stressful areas of practice and relate to perceived adequacy of business training. These objectives were met by answering the following research questions:

1. Do graduate orthodontic education programs adequately prepare new orthodontists for the business of orthodontics?
2. How does the perceived adequacy of business background relate to the amount stress experienced in the early years of practice?

2.2 - Methods

2.2.1 – Canadian Graduate Orthodontic Programs

To address the first objective of this study, program directors of the five Canadian graduate orthodontic programs active in 2009 were contacted via a mailed letter

(Appendix B). The letter identified the study, and requested detailed information about each program's current business/practice management curriculum, including teaching hours, topic details, reading lists, assignments and assessment information. The sixth Canadian orthodontic program, under final development in 2009, was also contacted however this program had not yet defined a practice management curriculum so it is excluded from these findings. The second objective of this study was assessed via a survey administered to Canadian orthodontists, and is described below.

2.2.2 - Survey Instrument

The intentions of this survey were to identify the most critical areas of business savvy required to be successful in the business of orthodontics, and to provide the investigator with an understanding of how this knowledge was initially acquired and how past educational experiences in graduate school had affected orthodontist's practice management and business successes. The research tool for this investigation was an English language questionnaire delivered online. The questionnaire tool was developed to be distributed to practicing Canadian orthodontists, as identified by their registration with their provincial licensing bodies as of October 2009.

Before developing the questionnaire, an interactive discussion focus group meeting was held by the primary investigator with three practicing orthodontists, two of whom were recent graduates and the other whom was an established orthodontic practice owner. Issues including sources of stress in orthodontic practice, factors threatening or influencing the delivery of orthodontic care, important business principles for orthodontic practice, and sources of business related information were explored and discussed. More senior orthodontists' attendance at the focus group was sought and, since they could not attend, an individual conversation was used to supplement the findings from the focus group meeting. A draft survey was created by the investigator using a combination of information gathered from the focus group, conversations with senior orthodontists and published literature. The initial survey tool was made available online and pilot tested by the orthodontist members of the focus group and thesis committee. Feedback was used to make minor modifications to both the questionnaire and its online delivery for improved validity, clarity, ease of use, and appropriateness and comprehensiveness of material.

The questionnaire tool was comprised of five sections gathering information on the following; background, stress, practice management exposure, practice management needs and open ended questions to discuss practice management curriculum. The final

questionnaire (Appendix C) received ethics approval (Appendix A) from the University of Alberta Health Research Ethics Board before data collection began.

Partway though data collection, it became apparent that some respondents were being automatically taken out of the questionnaire and their unfinished questionnaire was submitted when they hit the enter key within certain fields. This problem was corrected as soon as it was identified, however six incomplete questionnaires were already submitted. This data was screened closely and compared to other submissions for repeats. One of the six incomplete surveys had a complete survey that matched its demographic information exactly submitted just after the incomplete survey. This was assumed to have been a re-submission by the orthodontist who was accidentally taken to the end, and the matching incomplete survey was deleted from the data. The other five incomplete surveys did not appear to have repeat demographic data submitted and these submissions were kept as part of the final data.

It also became apparent during data collection, after 113 responses had already been received, that some orthodontists did not wish to report their gross salary. Initially salary range options were available in a drop-down box, with the default being the lowest of the options ($199,999 or less). Some orthodontists made comment in their open-ended response questions that they were leaving the default response in lieu of providing a response here. Once this problem became apparent a "prefer not to disclose" option was added. The "$199,999 or less" responses were screened closely and if the income did not make sense in relation to hours worked, graduation year, and number of cases started, or where the respondent indicated in open-ended responses later that they did not wish to disclose their income, the response was assumed to have been "undisclosed" and was re-entered accordingly. Where it was unclear, the data was left as submitted.

2.2.3 - Survey Distribution

A list of all orthodontist in Canada registered with provincial licensing bodies in October of 2009 was compiled. Mail-outs were sent to this entire population of orthodontists excluding those whose addresses were not provided by the provincial body and could not subsequently be found (10 in total), and those orthodontists who had been previously exposed to the research project by means of thesis committee, focus group involvement, or through individual contact from the primary investigator (11 in total). A total of 719 orthodontists comprised the sample population for this study and the initial notification was mailed to all. It is important to note that though all Canadian orthodontists were included in this study, some may have been secondarily excluded by

way of the English-only availability of the questionnaire tool. It was felt that the added effort and introduction of translation or communication error to make the questionnaire available in two languages outweighed the potential benefit of reaching a greater amount of the target population. The province of Quebec is a francophone province, however the prevalence of use of both languages is 40% overall according to statistics Canada, and is likely greater amongst highly educated people such as our target population, so it was hoped that a representative sample would still be obtained from this province.

The *Letter of Initial Contact* (Appendix D) introducing the study and detailing how to access the questionnaire tool online was mailed to the study population. It included the researcher's contact information welcoming orthodontists to direct any questions or requests for a paper copy of the survey to the researcher directly. Approximately two weeks after the initial mail-outs were sent, a *Questionnaire Reminder* letter (Appendix E) was sent reminding orthodontists to visit the website and complete the questionnaire. A statement thanking those orthodontists whom had already responded was included. A second and *Final Reminder* letter was printed on green paper and mailed with the date that data collection would be complete indicated. Active data collection spanned just over two months in duration.

In total, 719 initial mail-out notifications were sent. Twenty-five were returned as undeliverable, and of these correct addresses were located for 19. Those orthodontists (6) whose corrected addresses could not be located were considered non-practicing and were excluded from the study. A total of 713 practicing orthodontists then comprised this study population and sample. Valid responses were received from 136 orthodontists, for an overall response rate of 19% (136/713).

2.2.4 - Data Analysis

The questionnaire tool directly coded all submitted responses into a spreadsheet that could be used for analysis. This mode of data entry eliminated data entry errors and the need to check for data entry accuracy by removing the potential for human error from the process. Only two surveys were returned in hard copy format. These responses were hand entered and each entry was double checked for accuracy by the primary investigator.

The statistical program SPSS Statistics version 17 (SPSS.com) was used for data analysis. Descriptive analysis was completed for all data. Further analysis for relationships between variables was carried out as appropriate to answer the research questions.

Cross-tabulation tables and Chi-square analysis were used to test the relationships between categorical variables. Chi-square analysis is the main distribution used for handling inferences about categorical data. Chi-square tests the data for either independence or homogeneity.(7)

2.3 - Results

Four of the five Canadian graduate programs that were contacted requesting information about their currently offered business/practice management curriculum responded with details. The coverage ranged from 15-27 hours of lecture-based information presented mostly by practicing orthodontists, with some guest lectures from specialists in some areas such as law and accounting. Some programs provided an opportunity for residents to arrange office visits to see an orthodontic practice in function. Didactic areas covered included the areas of practice alternatives and information about incorporation in all programs, while other topics including law, ethics, scheduling, accounting, information technology, marketing, and systems were inconsistently reported. Most programs made no mention of coverage of topics including communication, leadership or staff management. No program offered the practice management information as a formal course, and evaluation of students either did not exist or was based on participation.

The final population of Canadian orthodontists included in this study and assumed to have received notification of the survey was 713. Valid responses were received from 136 orthodontists, for an overall response rate of 19% (136/713). All respondents indicated that they were orthodontists actively practicing orthodontics in Canada at the time of their response. The main demographic data for respondents is summarized in Table 2.1, and complete descriptive data is available in Appendix F.

2.3.1 - Pre-orthodontic business or practice management exposure

As shown in Table 2.2, over 90% of respondents reported having no formal business training before dental school, and did not work in another profession prior to general dentistry. Those few who did report business-related background mostly had experiences that could be categorized in the general areas of undergraduate level business training, or managerial positions in the service sector. Pre-dental professions that were reported were varied, and spanned banking, real estate, various areas of science or health application and research, information technology and retail.

More than 75% of respondents (Table 2.2) reported some amount of private practice general dentistry experience prior to their orthodontic training, ranging from 1 to 15 years (median 3 years). None, however, reported owning their own clinic during their time in general dental practice.

2.3.2 - Graduate-level business or practice management exposure and its perceived effectiveness

Figure 2.1 shows that over 90% of respondents reported their practice-management related exposure formally provided by their graduate orthodontic programs to be *none*, or *a small amount*. Only 7% reported *a moderate amount* of exposure, 2% reported *a lot*, and no respondents selected *too much* in this category. The main mode of exposure that responding orthodontists remembered was in the form of lectures provided by experienced orthodontists. Table 2.3 shows the use score for all of the modes of exposure listed.

Two questions were used to evaluate the perceived adequacy of responding orthodontist's preparedness for the business challenges of early orthodontic practice as provided by their graduate programs. One questions essentially asked "did you get enough training in graduate school?" and the other essentially asked "would you have wanted more training in graduate school?". When questioned if the amount and type of exposure above was enough to prepare them for the business of orthodontics challenges faced in the early years of practice, over 80% (Figure 2.2) felt unprepared for the first year of practice and the first 2-3 years of practice, and over 70% felt unprepared for the first 4-5 years of practice. When asked if they would have preferred a graduate program that devoted more formal hours to business training, 70% responded affirmatively.

Chi-square analysis found the relationship between respondent's feeling of preparedness for the first year of practice and their desire to have had more practice management exposure in graduate school to be statistically significant with $\chi^2(2)=17.2$ ($p<0.001$), N=126). Looking at the relationship between orthodontist's reported desire for more business training in their graduate programs, Figure 2.3 shows that 65% of respondents both felt unprepared for their first year of practice and would have preferred more business training in school.

About 70% of respondents attended a Canadian graduate orthodontic program and 30% an American program. A look at the relationship between the country in which respondents' received their graduate orthodontic training and their feeling preparedness

for orthodontic practice revealed no statistically significant differences. Similarly, no statistical relationship between graduation year and feeling of preparedness was revealed.

Responses were quite divided regarding how realistic people's expectations of future earning potentials and financial needs were upon completion of their graduate orthodontic programs, as seen in Table 2.4. Over 50% of respondents indicated that they were not adequately prepared for their future earning potential, and all of these felt they had underestimated in this area. Similarly, just under 50% did not have realistic expectations for their future financial needs, with over 70% of these having underestimated this need.

2.3.3 - Stress in orthodontic practice

Stress levels were rated as mild, moderate, high or extreme for the first five years of practice, and again for current stress levels by respondents in practice more than five years. As shown in Figure 2.4, the first five years of practice was reported as either moderately stressful or highly stressful by 75% of respondents. Current stress levels were notably lower with close to 25%, reporting mild/no stress, and no orthodontists reporting extreme stress. Paired samples t-test shows this difference in stress experienced to be statistically significant at $p<0.001$.

Current practice related sources of stress were evaluated on a 5-point scale, where a response of 1 indicated that item is not a source of stress and 5 indicated that the item is a high source of stress. The mean severity scores for each item were calculated and are shown in Table 2.5. Only four of the eighteen items had a mean severity score over 3.0 indicating a moderate to high source of practice-related stress; *staff management, satisfying patients, marketing* and *time management*.

A list of 22 items were then rated on a 5-point scale for the challenge the item presented to the respondent in the transition from graduate school to orthodontic practice. One (1) on this scale represented no challenge presented by the item and 5 represented a highly challenging item. Again, a mean severity score was calculated for each item on the list. Sixteen items scored above 3.0 indicating that they presented a moderate to high challenge to new orthodontists in the transition from graduate school to orthodontic practice and these are detailed in Table 2.6.

2.3.4 - Relationship of business background and stress experienced in early practice

As previously revealed in this study, two factors are used here to categorize the adequacy of a respondents' preparedness for orthodontic business practice; their reported desire for more business management training in graduate programs and their perceived

preparedness for the business challenges faced in the first year of practice. Chi-square analysis did not reveal a statistically significant relationship between stress levels experienced in the first 5 years of practice and their desire for more business management training in school $\chi^2(6)=2.55$ ($p=0.863$), N=134, nor in relation to their preparedness for the first year of practice $\chi^2(3)=5.2$ ($p=0.158$), N=125.

2.4 - Discussion

2.4.1 - Pre-orthodontic business management exposure

There are two main time frames in which orthodontists would mostly likely have been in a position to receive business training or work exposure outside of their dental academics; either before entering their undergraduate general dental training, or between their undergraduate dental training and graduate orthodontic training. Business exposure and practice management experience prior to the commencement of their graduate orthodontic programs was limited as reported by responding orthodontists. It appears that orthodontists are most likely to have had either no or minimal work or study experience outside of dentistry in areas of business or management, and their general dental private practice experiences, though common, are unlikely to involve practice ownership.

An area not assessed by this survey is the quantity and quality of practice management information provided by respondents' undergraduate dental school during their general dental training. The average US dental school offered 73 hours of practice management instruction in 2006-07.(8) This is up from 53 hours reported in the same study in 1997-98. United States dental school practice management course directors overwhelmingly feel that the practice management portion of dental school curriculums should be expanded.(9) Such data is not available for Canadian dental schools however some estimate even less instructional time is allotted in this country.(10) A recent study of general dental students' perspective on curriculum found the importance of practice management education ranked above lab work, organized dentistry and research components, but below clinical experience, patient management and didactic coursework. As students got closer to graduation, they ranked practice management with increasing importance.(11)

Among other things, the National Dental Examining Board of Canada (NDEB) is responsible for the establishment of qualifying conditions for a national standard of dental competence for general practitioners. Their published list of 47 competencies for a

beginning dental practitioner in Canada includes two of relevance to this study. Competency numbers 45 and 46 state that the beginning dental practitioner must be competent to "apply accepted principles of ethics and jurisprudence to maintain standards and advanced knowledge and skills" and "apply basic principles of practice administration, financial and personnel management to a dental practice". No further guidelines or curricular requirements influence Canadian general dentistry programs in this area.

2.4.2 - Graduate level business management exposure and its perceived effectiveness

The majority of practicing Canadian orthodontists who responded to the survey felt that their graduate orthodontic program provided little or no business or practice management-related exposure over their duration of study. The primary mode of exposure reported to have been provided by programs was in the form of lectures by experienced orthodontists. It appears that some other potentially valuable and effective forms of providing practice management education, such as training in business basics, clinical program designed to mimic private practice and utilization of practice management consultants and area specialists such as lawyers and accountants(2), may be underused in orthodontic graduate schools. Also seen here a strong tendency for orthodontists to remember that they felt unprepared for the business challenges faced in early practice, and a division about how well they were able to estimate their future financial needs and income-earning potential. Other studies(1,4) have found dental school and graduate programs provide insufficient practice management information for management of dental specialty practices, and support our findings here.

A review of the course information published in Canadian university graduate orthodontic online course calendars did not find listed any formal business or practice management related courses, nor even any mention of business education provision in their approximately three-year programs. Sequential surveys spanning 17 years of orthodontic education in Canada and the United States, report an increasing prevalence of formal practice management courses being offered. Most recently in the year 2000, 82% of responding programs offered such a course, up from 63% in 1983.(12) In an attempt to quantify the practice management exposure currently provided by our Canadian training programs, each program director was contacted to request details of the practice management exposure included in their graduate program. Four of the five Canadian graduate orthodontic programs active in 2009 provided a detailed informal practice management course syllabus. As previously indicated in the results, the hours, breadth

and depth of these courses varied, in part due in part to the lack of standards and requirements.

A standard national practice management curriculum for orthodontists in training does not exist in Canada, and there are no specific requirements in this area for program accreditation.(13) Both ethics and practice management topics appear on the Commission of Dental Accreditation of Canada's (CDAC) list of necessary knowledge, and a statement is made that graduates must be proficient to practice orthodontics in full compliance with accepted standards of ethical behavior, however no further guidelines in this area are provided.

2.4.3 - Stress and challenges in orthodontic practice

In 2002 Roth(6) investigated occupational stress among Canadian orthodontists. He looked at the frequency and severity of orthodontic practice related stressors. Time-related stressors showed the highest mean combined severity and frequency scores. The three most highly scored individual stressors; the patient shows dissatisfaction with the care received, performing clinical tasks on a difficult or uncooperative patient, and falling behind schedule(6) are similar to some of the most severe current stressors identified in this study; satisfying patients, and time management. Additionally, this study also found staff management and marketing to be significant sources of stress for orthodontists in practice and supports a study of practice management for periodontists which found staffing issues and marketing matters to be the most challenging practice management aspects in periodontal practice.(4)

A survey of US dental school practice management course directors ranked customer service, employee productivity, employee skills, accounts receivable management and cash flow as the greatest challenges in managing a dental practice as a service business, and ranked personnel management, customer service and supervisory skills as the most important educational components of business training required for entering practice.(9) Additionally, a high number of course directors felt that students would benefit from additional instruction in all of these areas.(9)

Shiver (2001) used input from practicing orthodontists to develop categories of knowledge, skills and abilities essential for orthodontic practice. The eight categories identified were leadership, staff management, communication, practice promotion, education, planning, accounting and quality care.(1) The list of challenges in transition to practice generated by this study include the leadership, staff management, practice

promotion, planning and quality care categories. An additional area of importance identified here is time management.

2.4.4 - Relationship of business background and stress experienced in early practice

The data available in this study did not reveal a statistically significant relationship between the perceived adequacy of respondents' business management background and the practice-related stress experienced in early orthodontic practice. This lack of a statistical relationship may in part be attributed to having highly skewed data in which a high percentage of respondents feeling that their business management background was inadequate. Chi-square analysis is not entirely appropriate for data skewed in this manner. The data did reveal, however, find a high level of early practice stress, and a high percentage of respondents both remembering that they did not get enough practice management exposure in graduate school to feel prepared for the early years of practice, and desiring more practice management information in graduate schools. Another study(6) has revealed that practice management issues such as time management may contribute to an orthodontist's stress, however no more detailed examination of this relationship could be located in the literature. The literature does reveal a negative correlation between occupational stress and overall job satisfaction in orthodontics, and one of the strongest overall stress effects is on orthodontist's satisfaction with practice management.(14)

2.5 - Conclusions

The study method and response rate here allow conclusions to be drawn about the responding orthodontists represented in the study data only. The objectives of this portion of the study were to quantify the current level of business and practice management exposure in Canadian graduate orthodontic programs, and to identify challenging and stressful areas of practice and relate to perceived adequacy of business training.

Research Question 1: Do graduate orthodontic education programs adequately prepare new orthodontists for the business of orthodontics?

- This investigation found that while Canadian graduate programs currently do not offer formal practice management courses listed as a part of the course calendar, having a course number and requiring student registration, four of the five programs were able to provide a practice management course syllabus for an

informal offering within their programs. The hours, breadth and depth of these courses are varied.

- Canadian orthodontists surveyed here largely perceived that graduate programs have not been adequately preparing new orthodontists for the business aspects of orthodontics. Many report feeling unprepared for the business challenges experienced in the early years of practice, and a large majority would have preferred a graduate orthodontic program that would have devoted more time to formal business-related training. This feeling is independent of both graduation year, and the country from which they received their orthodontic training.

Research Question 2: How does the perceived adequacy of business background relate to the amount stress experienced in the early years of practice?

- Reports of practice-related stress levels remembered in the first five years of orthodontic practice cluster around "moderately stressful" and "highly stressful". Current practice related stress levels cluster around "moderately stressful". Practice related stress is interpreted to decrease with experience in practice, but still remains of significance to orthodontists.
- The main current sources of stress in orthodontic practice are identified as staff management, satisfying patients, marketing and time management.
- No statistically significant relationship between preparedness for the business of orthodontics and practice-related stress levels experienced in the first five years of practice was identified.

Additional finding:

- The knowledge, skills and abilities that present the most challenge in the transition from graduate school to orthodontic practice fall into the general categories of leadership, staff management, practice promotion, planning, quality care and time management.

2.6 – Chapter 2 Tables and Figures

Table 2.1: Main descriptive data of survey respondents

Characteristic	*n*	*%*
Graduation Year	Total = 136	
1969 and earlier	2	1.5%
1970-79	17	12.5%
1980-89	38	27.9%
1990-99	41	30.1%
2000 and later	38	27.9%
Graduation Country	Total = 135	
Canada	93	68.9%
United States	40	29.6%
Other	2	1.5%
How Soon Began to Practice After Graduation	Total = 136	
Within 6 months	123	90.4%
In 7-12 months	8	5.9%
In 13-24 months	3	2.2%
In 25+ months	2	1.5%
Province of Primary Practice	Total = 136	
British Columbia	23	16.9%
Alberta	31	22.8%
Saskatchewan/Manitoba	12	8.8%
Ontario	41	30.1%
Quebec	20	14.7%
Atlantic Provinces	9	6.6%
Type of Primary Practice	Total = 136	
Solo Practice	77	56.6%
Associateship – Associate	9	6.6%
Associateship – Owner	7	5.1%
Partnership	17	12.5%
Cost-sharing Group Practice	22	16.2%
Academic	2	1.5%
Other		

Table 2.2: Business management training and work experience

Characteristic	*N*	
Formal business training before dentistry?	Total = 135	
No	130	96.3%
Yes*	5	3.7%
Another profession before dentistry?	Total = 135	
No	124	91.9%
Yes **	11	8.1%
→ If yes, how long? (years)	Total = 10	Mean – 3.6 SD – 3.1 Median – 3 High – 10 Low – 1
Private practice general dentistry before orthodontics?	Total = 134	
No	31	23.1%
Yes	103	76.9%
→ If Yes, for how long?	Total = 103	Mean – 3.7 SD – 3.0 Median – 3.0 High – 15 Low – 1
If Yes, did you own a clinic?	Total = 103	
→ No	103	100%
Yes	0	0%

*Responses were mostly in the general categories of undergraduate training in business or managerial experience in the service sector

** Responses included banking, real estate, various areas of science or health application and research, information technology, and retail.

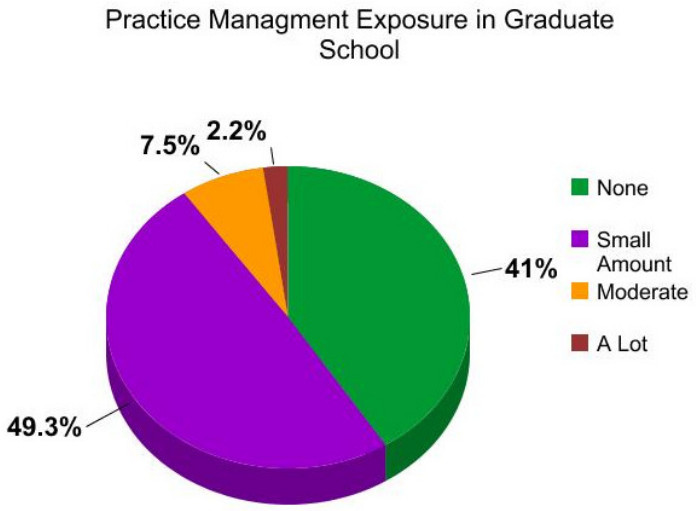

Figure 2.1: Practice management exposure provided by graduate training programs. (*n* = 134)

Table 2.3: Mean form of practice management-related exposure provided by graduate orthodontic programs, as reported on a 5-point scale (where 1 = Not at all and 5 = Primary mode of exposure). Not-applicable and missing responses were excluded from analysis.

		Use Score – Mode of Practice Management Exposure	
Item	*n*	*Mean*	*SD*
Lecture based by experienced orthodontists	89	3.61	1.59
Mentorship by established orthodontists/office visits	88	2.61	1.47
Orthodontic-specific business issues	85	1.98	1.25
Lecture based by specialists in each area (lawyers etc)	86	1.79	1.25
Exposure to practice consultants	87	1.70	1.06
Clinical experience designed to mimic private practice	87	1.63	1.25
Business basics	86	1.38	.90
Immersion-type (ie week-long business-only conference/seminar vs year long course)	87	1.14	.46
Experiential (ie: mock business planning scenarios, Design a business plan/associateship agreement)	87	1.11	.44
Other *	21	1.71	1.52

*Other responses included presentations by supply company representatives, and information provided by orthodontic associations.

Table 2.4: How realistic respondents' financial expectations were at graduation

Realistic expectation of…		*N*	*%*
… future earning potential		Total = 134	
Yes		64	47.8%
No		70	52.2%
		Total =72	
→	Over estimated this potential	0	0%
	Under estimated this potential	72	100%
	Unsure	0	0%
… future financial needs		Total = 131	
Yes		68	51.9%
No		63	48.1%
		Total = 62	
→	Over estimated this need	6	9.7%
	Under estimated this need	45	72.6%
	Unsure	11	17.7%

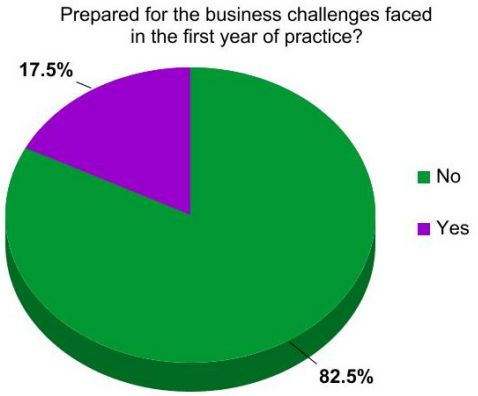

Figure 2.2: Respondents' feelings about their preparedness for the business of orthodontics challenges faced in the first year of practice. (n = 126)

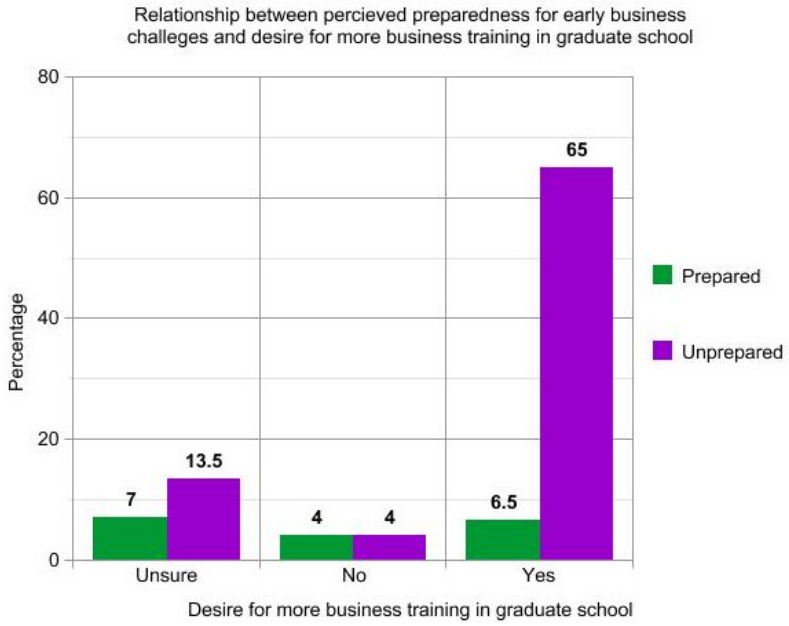

Figure 2.3: Relationship between orthodontist's reported desire for more business training in their graduate programs and their perceived preparedness for the business of orthodontics challenges faced in the first year of practice. (n = 126)

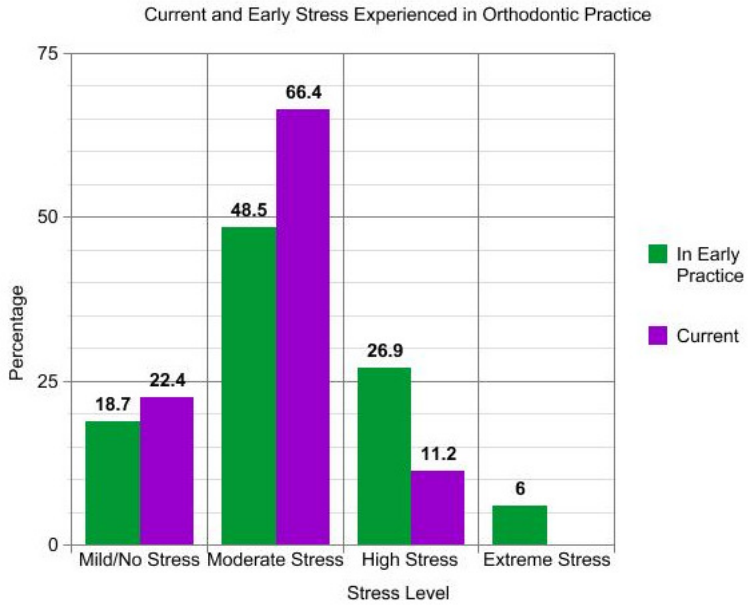

Figure 2.4: Practice related stress levels reported by orthodontists as remembered for their first five years of orthodontic practice (early practice), and currently for those who have been practicing more than five years. (Early practice *n* = 134 , Current *n* = 107. Percentages indicated for early practice total and current total)

Table 2.5: Mean current practice related stress from listed items as reported on a 5-point scale where 1 = not stressful and 5 = highly stressful. Not applicable and missing responses were excluded from analysis.

		Severity Score – Current stress	
Item	*n*	*Mean*	*SD*
Staff management	133	3.50	1.17
Satisfying patients	135	3.06	1.00
Marketing in the community	132	3.03	1.23
Time management	133	3.02	1.22
Pace of work	135	2.97	1.14
Gaining respect from referring professionals	135	2.87	1.27
Attracting patients	134	2.86	1.20
Office document development/Systems implementation	129	2.79	1.08
Negotiating associate, transition or practice purchase contracts	89	2.75	1.27
Tax planning	132	2.55	1.12
Clinical decision-making “on your feet”	135	2.44	1.03
Budgeting	130	2.42	1.12
Negotiating leases on professional space	117	2.42	1.25
Gaining respect from patients	133	2.14	1.06
Gaining respect from staff	133	2.08	1.02
Negotiating leases on professional equipment	102	1.87	1.00
Dealing with financial institutions/lenders	130	1.86	1.21
Dealing with orthodontic supply companies	130	1.53	0.70

Table 2.6: Mean transition to practice challenge from listed items as reported on a 5-point scale where 1 = not challenging and 5 = highly challenging. Not applicable and missing responses were excluded from analysis.

		Severity Score – Transition to Practice Challenge	
Item	*n*	*Mean*	*SD*
Figuring out how to begin the process of building your own practice	112	3.70	1.29
Attracting patients	133	3.68	1.20
Staff management	135	3.67	1.13
Marketing yourself in the community	131	3.64	1.16
Gaining respect from referring professionals	131	3.60	1.19
Deciding that you would build your own practice From scratch	106	3.40	1.60
Clinical decision-making "on your feet"	135	3.38	1.11
Office document development (systems implementation)	125	3.34	1.18
Satisfying patients	135	3.28	1.12
Figuring out how to join/buy a practice	100	3.26	1.44
Selecting a practice to join/buy	110	3.22	1.45
Negotiating contracts to associate, transition or purchase an existing practice	87	3.21	1.50
Negotiating leases on professional space	121	3.21	1.33
The pace of work	135	3.10	1.14
Time management	132	3.09	1.16
Dealing with financial institutions/lenders	129	3.08	1.34
Gaining respect from patients	132	2.92	1.18
Budgeting	130	2.90	1.12
Gaining respect from staff	132	2.83	1.17
Tax planning	128	2.80	1.22
Negotiating leases on professional equipment	103	2.80	1.35
Dealing with orthodontic supply companies	133	2.35	1.09

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Chapter Three

The Canadian Orthodontists' Vision for a Practice Management Curriculum

Where, Why, What, When, How?

3.1 - Introduction

Canadian graduate orthodontic programs currently do not offer formal practice management courses within the parameters of their programs (Chapter 2). There is a varying amount of informal exposure provided by these programs (Chapter 2), and since practice management is not in any way required by national standards(1), there is risk that even these informal exposures could be pushed aside as pressures from other educational areas dictate. One American orthodontic program has an established formal practice management curriculum clearly described in the literature, and the experiences of this program may serve as a guide for other programs seeking to implement such a curriculum.(2)

The literature supports the notion that new orthodontists and other healthcare professionals are leaving graduate school unprepared for the business practices of their profession.(2-5) Sinclair and Grady(2) combine their experiences in orthodontic practice, orthodontic education and orthodontic consulting to observe that when little or no emphasis is placed on helping new orthodontists understand and implement the basic business principles that should be employed in orthodontic practice, bad habits develop and costly mistakes are made.

Veterinary medicine is the most prominent of the healthcare professions in the literature both in terms of studies identifying the need for improved business skills(6,7) and in terms of the development (6-10), and implementation and review of new curriculums for training veterinarians in both general business and in veterinary practice management.(4) The orthodontic profession should take note of the veterinary profession's recognition that their future success would be judged by their "responsiveness to the changing needs and expectations of society" and their "ability to adapt and acquire new knowledge and skills in meeting these diverse needs", and their timely action on this insight.(7)

The objectives of this investigation were to identify: business and practice management topics critical for orthodontic practice success; orthodontists' current sources of practice management information; some of the financial consequences related to perceived inadequate business training; areas of deficiency in the business-related exposure currently provided by graduate orthodontic programs, and to quantify the impact that practice management background has on business related decision making early and later on in an orthodontic career. In addition, it was intended to make key

curriculum recommendations to Canadian graduate orthodontic programs as an outcome of this study. These objectives were met by answering the following research questions:

1. How does the perceived adequacy of business background relate to the proportion of focus on pursuing business continuing education opportunities in the early years of practice?
2. How does the perceived adequacy of business background relate to new orthodontists making less sound initial business decisions that have future consequences?
3. What are the business areas that are most important to orthodontic practice according to experienced orthodontists?

3.2 - Methods

3.2.1 - Survey Instrument

An online questionnaire tool was developed to explore the business practices and practice management educational needs and perspectives of practicing Canadian orthodontists. It included sections to gather respondent demographic information and to quantify past practice management training exposures and current needs and a section allowing for open-ended discussion on topics of orthodontic practice management curriculum.

The questionnaire was developed with the help of a focus group consisting of practicing orthodontists, whose group discussion brought to light various issues and topics that could be explored by the survey. A draft survey was created, and pilot tested by the focus group and orthodontic members of the thesis committee. Modifications were made, based on the feedback from this process, to both the questionnaire and its online delivery for improved validity, clarity, ease of use and appropriateness and comprehensiveness of material.

The final questionnaire (Appendix C) received ethics approval (Appendix A) from the University of Alberta Health Research Ethics Board before initial notifications were distributed to Canadian orthodontists.

During data collection two problems were noticed and corrected as soon as possible. The first involved inadvertent submission of incomplete questionnaires when the respondent touched the enter key while in certain answer fields. The second involved respondents not wishing to report their gross practice income, but not having an option to leave this field blank, therefore many respondents may have left the default “$199,999 or

less" where this was not true answer. These problems resulted in six incomplete surveys being submitted, and multiple "$199,999 or less" gross income responses. The data was screened closely and one of the 6 incomplete submissions had a duplicated complete survey submitted so the incomplete one was discarded. The other 5 were kept as part of the data set. The income responses were checked against hours worked, graduation year, and number of case starts and where the lowest gross income level did not make sense, the response was changed to "prefer not to disclose". Where it was unclear, the data was left as entered.

3.2.2 - Survey Distribution

A list was complied of all orthodontists registered with provincial dental licensing bodies as of October 2009. The study population for this investigation comprised all of these identified orthodontists, excluding those whose addresses were not provided by the licensing body and that could not subsequently be found (10 in total), and those who had previously been exposed to the research topic during its developmental stages (11 in total). The final sample population count included 719 orthodontists. Though attempts were made to include all Canadian orthodontists in this study, some may have been secondarily excluded by way of language as the survey was only available in English-language format.

Three mailed contacts were made with the study group members. A *Letter of initial Contact,* a *Questionnaire Reminder Letter (*Appendix D and E), and a *Final Reminder Letter* were all sent via Canada Post. Active data collection spanned just over two months duration.

A total of 719 initial notifications were sent. Twenty-five (25) were returned as undeliverable and of these, correct addresses were located for 19. The six (6) orthodontists whose correct addresses could not be located were assumed to be non-practicing and excluded from the study population. A total of 713 orthodontists comprised the final study and sample population here. The response rate was 19% (136/713).

3.2.3 - Data Analysis

The online format of the questionnaire tool involved software that directly coded all submitted responses into a spreadsheet that could be opened in Microsoft Excel or SPSS for manipulation and analysis. This eliminated data entry errors for all online submissions. Only two surveys were returned in hard copy format and these responses

were hand entered by the primary investigator and each entry was double checked for accuracy.

The statistical program SPSS Statistics version 17 (SPSS.com) was used for data analysis. Descriptive analysis was completed for all data. Further analysis for relationships between variables was carried out as appropriate to answer the research questions. Chi-square analysis was used to test the relationships between categorical variables.

Open-ended responses provided qualitative data. The themes from this data were explored, and discussed in the results and discussion sections. One open ended question allowed for discussion by the respondent, but also asked the respondent to choose between two options: "If you were applying for your post-graduate orthodontic training again, and you had a choice between a typical Master's of Science type of program…and a Master's of Business Administration type of program… which program would you prefer and why?". This data was recoded into nominal variables based on the orthodontist's program preference and Chi-square analysis was used to explore if responses varied with certain demographic considerations. These finding were supplemented with a qualitative discussion of the written responses.

3.3 - Results

The final sample of orthodontists included in this study was 713. Valid responses were received from 136 orthodontists, for an overall response rate of 19% (136/713). All respondents indicated that they were orthodontists actively practicing orthodontics in Canada at the time of their response. The main demographic data for respondents is summarized in Table 3.1, and complete descriptive data is available in Appendix F.

3.3.1 - Where a practice management course fits in a graduate orthodontic program

Over 80% of respondents felt unprepared for their first year of orthodontic practice, and as shown in Figure 3.1, the majority of respondents felt that they would have preferred a graduate orthodontic program that devoted more hours to formal business training by way of a structured practice management and business background curriculum. As shown in Figure 3.2, when these positive respondents were questioned about where to find the time to fit in such a curriculum 81% would have readily sacrificed *free time*, 70% would have sacrificed *research time*, 66% would have sacrificed time for *didactic exposure in other areas*. Interestingly 60% were strongly

against sacrificing any *clinical time* for business exposure. One respondent made the comment: “Grad residents should have the opportunity to be exposed and become familiar with business practices but I'm not sure it should be a large component of the curriculum, especially if it takes away from the didactic or clinical aspect of orthodontic education.”

Despite the general feeling that graduate programs should include more comprehensive orthodontic practice management coverage, Figure 3.3 illustrates that many respondents would not have been willing to extend their program length to obtain a form of certification in advanced business education. Those who did say they would have extended their program length indicated they would have been willing to add an average of 3 months on to their program, with a maximum program extension of 8 months reported.

Mentorship was explored as a possible means of sharing practice management information and practices between established orthodontists and orthodontists in training. As shown in Table 3.2, close to 70% of respondents would be potential sources of mentorship relationships, many of these respondents stating that they would want certain conditions on their mentorship experience. The most significant barrier to mentorship for this population appears to be the fear of future competition from the student being mentored.

3.3.2 - The value of a practice management program

When asked if they felt that more business training would have avoided some business related mistakes in early practice, Figure 3.4 shows that just over 50% of respondents thought that it would have helped avoid some mistakes. The costs of the mistakes are ranked from *financial costs* to *stress-related costs*, *employee/staff costs*, *time-related costs* and finally to *job satisfaction costs* as shown in Table 3.3. Respondents exhibited a lot of uncertainty when asked to predict the effect that an improved business and practice management background prior to commencing orthodontic private practice would have had for them. Approximately one-third of respondents answered *unsure* when asked if they thought they would now be in a better financial position, or have improved job satisfaction had they had a better business management background. The actual distribution of responses is available in Table 3.4.

A question was designed to explore the complexities around the potential financial impact of inefficient business management practices on an orthodontic career. Respondents were asked to estimate since graduation, approximately how much money

they had: *spent directly on business management related education, lost in terms of inefficient use of billing professionals, lost in terms of inefficient or inappropriate use of auxillary staff,* and *lost in terms of poor negotiating skills.* The response rate for these questions was low, the range and variance in the answers that were provided was very high. Table 3.5 shows the quartile distribution of theses responses.

The overall perceived value of a well designed and delivered practice management curriculum offered as a mandatory component of graduate orthodontic programs was rated on a 5-point scale where 1 represented *not valuable* and 5 represented *very valuable.* The mean score of 3.86(SD 1.07) indicates that such an addition to curriculum is considered valuable to the majority of responding orthodontists. The distribution of responses on this 5-point scale can be seen in Figure 3.5.

3.3.3 - Practice management educational practices and needs

A list of possible sources of professional development information in practice management was provided and respondents were asked to rate each on a 5-point scale for amount of use. Responding orthodontists tended to use colleagues (mean use score of 3.69) and orthodontic conferences (mean use score of 3.15) the most. Table 3.6 shows scoring details for these, and the remaining information sources. Table 3.7 shows each item in Table 3.6 with the corresponding percent of respondents who selected "1" or *not used at all.*

Many different professionals may be on an orthodontists' professional advisory team and the requirement for certain professionals' assistance may flux with career stage. As a new orthodontist transitions to practice, the most commonly reported *essential advisory team member* was an *accountant*, followed by a *lawyer*, and a *banker or lender*. The professionals reported to be *currently* on respondent's professional advisory teams were also most commonly an *accountant*, followed by a *lawyer*, however the third most common advisor reported to be used once in practice was a *financial planner*. The complete list and responses can be seen in Table 3.8.

On a 5-point scale, orthodontists report generally good quality and coverage of available continuing education courses on clinical topics (mean quality score of 4.54, SD 0.70) and technology topics (mean quality score of 4.38, SD 0.79). Their impression of the quality and coverage of available practice or business management courses, as revealed by non-parametric paired Wilcoxon testing, is statistically significantly (at $p \sim 0.000$) lower than both clinical and technology topics with a mean quality score of 3.02 (SD 1.11).

Responding orthodontists on average would prefer to divide their allotted time for continuing education with about 50% for clinical topics, just over 20% for each of technology topics and practice or business management topics, and another 10% on other topics. Table 3.9 gives a more detailed look at these preferences. Chi-square analyses were carried out to investigate relationships between the preferred allocation of time for these broad continuing education topics and respondents' reported amount of business management training provided in school, perceived preparedness for the business challenges faced in the first year of practice, and the desire for more practice management exposure in school, and no statistically significant relationships were revealed with any combination of these variables.

Orthodontic practice functionality appears to be heavily reliant on office systems. Respondents rated 17 different office systems on a 5-point scale for importance to orthodontic practice, where 1 represented *very unimportant* and 5 represented *very important*. All 17 had a mean score above 3.0 indicating some level of importance. The highest scoring systems included *accounts receivable system, recall system, delinquent accounts system, accounts payable system, referral tracking system, patient education system, continuing education program, and measurement of practice productivity.*

The same systems list as above was used to ask respondents when these basic principles should be introduced to budding orthodontists. Respondents were quite divided in their opinion regarding when concept introductions should be made. Over 50% of respondents agreed that the four most important systems as indicated above should be introduced in school, as well as *patient education systems, measurement of practice productivity,* and *practice promotion/marketing plan.* Table 3.10 shows the mean importance scores and where to introduce responses for all 17 systems of interest. These same systems were evaluated in another study(3) and the mean scores from that study are included in Table 3.10 for ease of comparison.

3.3.4 - The practice management curriculum

Open ended questions were included in the survey: "If you were to design a practice management curriculum…what topics or experiences would you be sure to include?... and to exclude?". The responses were grouped into categories, which were examined further and sorted into common themes. Common inclusion themes were: *Business negotiations; professional ethics; staff management; systems development concepts; business planning;* and *appropriate use of other professionals.* Other topics

that were less commonly cited, but worth mentioning include: *communication skills; conflict resolution; practice options; business structure;* and *financial planning.*

Orthodontists seem to see great value in the appropriate use of other professionals as demonstrated by comments such as "*seek well respected professional help"; "proper use of other professionals";* and *"how to seek out critical professional advisors*". One orthodontist took this concept a step further, encouraging orthodontic programs to allow certain materials to be taught by appropriate professionals rather than orthodontists in practice, which may often be the case: *"Accounting should be taught by accountants, management by experts in management etc. My worry is that most practice management programs are taught by orthodontists. Would anyone want an accountant teaching orthodontics?"* This same orthodontist offered one possible solution: *"…credible online courses…".*

Several respondents mentioned the role of mentorship in relation to successful practice: *"…time spent in mentor practices, checking out successful practices that work"*. Another respondent wrote: *"My US training was totally furnished by practicing orthodontists who brought us into their practices and gave us advice, copies of all their written correspondence, home phone numbers, and even opened their financial statements to us…(this) gives us a sense of belonging to a great group of people"*. Mentorship is a potentially under utilized means of sharing of professional information and experience. Respondents were asked if they would be willing to mentor graduate orthodontic residents or new graduates in the area of practice management and only 9% answered with a flat out "no". A large proportion were unsure, and the greatest proportion would be willing to mentor under certain conditions such as: "the resident will not be in direct future competition". (See Table 3.2)

Generally the respondents commented that they were grateful for any information pertaining to business success: "*The more topics that can be introduced in school, the better. Even if the importance of a given topic is not fully appreciated and all details are not retained, introducing various topics critical to business success provides future orthodontists with a resource to refer to and some basic awareness of potential problems*".

Given an opportunity to discuss aspects of business education that may best be learned on the job, many orthodontists recommended using graduate programs to introduce and establish "basic frameworks" that could be modified and personalized as appropriate once they were in practice: *"Formal education should outline the basics and*

provide a format or framework. Practical experience replaces theory with reality, which can be a devastating, although necessary experience. If the practitioner has a framework in which to formulate plans and systems, reality will be a lot easier to handle."

Interestingly, a response that appeared repeatedly when orthodontists were asked which topic would best be learned on the job was, again, *staff management.* Arguments were made for learning staff management issues while on the job, as opposed to in school, due to the specific, complex, and continually evolving nature of staff management: *"hiring or firing staff would only be a factor for a small number of new grads, and by the time a grad was ready to hire someone they might have forgotten much of the skills".*

This issue of appropriateness of "just in time" learning came up, not just with respect to staff management skills, but in relation to many practice management areas. Electronic communication was suggested as one possible solution to this concern: "*It would be useful to have a CE course like a webinar available…almost all of the topics would lend themselves well to webinar (format)…(they) could be available exactly when the person needs the information/skill."*

3.3.5 - Does an MBA have a place in Canadian graduate orthodontic education?

As shown in Figure 3.6, 55% of respondents said they preferred an MBA based graduate program format over the traditional MSc format, 35% preferred the traditional MSc and 10% had mixed feelings on this topic. Chi-squared analysis was conducted in search of a relationship between Masters of Business Administration (MBA) versus traditions Masters of Science (MSc) types of program preference and graduation year, gender, country of graduation and type of current primary practice. No statistically significant relationships were identified in any of these combinations.

Supporters of an MBA-based graduate orthodontic program felt that the skills gained in such a program might be more useful or applicable to private practice, and many commented that they did not feel they used their research skills much as a private practitioner. Supporters of the traditional MSc-based graduate program format were also often in strong opposition of an MBA based program. They expressed fears of loss of critical scientific thinking and lifelong learning, as well as the evolution toward orthodontic practice driven by corporate greed before professional standards and ethics.

Respondents with mixed feelings on the topic provided great insight. Many felt that the scope of an MBA was more than what an orthodontist would really use, but they acknowledged that there is a place for more business training in schools. An interesting

and somewhat representative comment was, "*We are health care providers. We should not just strive to be business people who try to make as much money as possible. The idea should not be to try to run a corporation that is extremely profitable, but rather run a practice and be smart about business matters*."

3.4 - Discussion

Over half of the survey respondents retrospectively predicted that had they been better prepared for the business of orthodontics they may have avoided some mistakes they made in early practice, and overall, respondents see significant value in a well designed and delivered practice management curriculum offered as a mandatory component of graduate orthodontic programs. If Canadian graduate programs are to respond to the potential need to design and implement a current and comprehensive formal orthodontic practice management curriculum, a vision for where it may fit in must be established. It appears that the majority of respondents would support and welcome a formal and structured practice management component to orthodontic education, and would be willing to reorganize both their free time, and the program structure to accommodate such a curriculum, but would be unwilling to see any significant addition to current program lengths. It may therefore be that a practice management curriculum would best be accommodated with the boundaries of current programs.

Experience with the University of Southern California's model orthodontic practice management program, in effect since 1994, has uniquely qualified Sinclair and Grady (2) to comment on the requirements of a practice management curriculum, and its goals and structure. In their experience a minimum time requirement for the didactic component would include two-hours per week for at least one year to accommodate a comprehensive and sequential series of lectures and seminars. Additional time would need to be set aside for orthodontic office visits and assigned projects and reports.(2)

Sequential studies of orthodontic education have identified "sufficient time to teach" as a major problem facing graduate programs in the United States and Canada.(11,12) Trends to increase program length from 24 months as commonly seen in 1983 to 30-36 months were identified as a means to alleviate these time constraints and accommodate teachings of all need-to-know materials in adequate breadth and depth.(11,12) More recent studies of orthodontic education could not be identified, however no Canadian orthodontic programs are using a 24 month format, and most US university-based programs have also extended program length.

One of the least satisfying aspects of a career in orthodontics, as reported by Canadian orthodontists, is practice management.(13) It is reasonable to ponder the possibility that this may be in part due to lack of preparedness in this area. The fundamental skills needed to manage high quality, service oriented, successful practices do not come by default with learning to be excellent clinicians.(2) Evidence of the need for greater practice management expertise is the prevalence of practice management consulting services. This study found that 58% of respondents have used such services to some degree. An internet search for "orthodontic practice management consultant" will produce link after link for groups and individuals offering all ranges of services from topic-specific webinars to customized total office reorganization. Though these services can be very effective, they can also be costly, possibly prohibitively so in the infant stages of a career when their services may be most valuable. (2)

It has been estimated that a balanced and comprehensive orthodontic practice management program in graduate school could save a new orthodontist $20,000 or more in their first five years of practice.(2). When respondents here were asked here to estimate, since graduation, approximately how much money they had: spent directly on business management related education; lost in terms of inefficient use of billing professionals; lost in terms of inefficient or inappropriate use of auxiliary staff; and lost in terms of poor negotiating skill; it became apparent that the potential impact of "unpreparedness" can be very costly (Table 3.3). The response rate for these questions was low, possibly due to the difficulty in calculating an accurate response, and the variance in the answers that were provided was very high. The median may be the most useful number in this data set, as it is a better indicator of central tendency in highly variant data. Note that no statistical conclusions may be drawn from this data, but it is included as an indicator and for interest purposes. Though the greatest costs of being unprepared for the business of orthodontics may be financial as seen here, we cannot dismiss the stress-related, staff-related, time-related, and job satisfaction costs of such ill-preparedness.

Colleagues, orthodontic conferences and professional journals are the most highly used sources of practice management information by respondents in this study, though orthodontists tend to use a variety of sources of information to varying degrees. More than 50% of respondents reported using each of; orthodontic conferences, colleagues, professional journals, books, supply company sponsored seminars/events, study clubs, practice management consulting companies(5), orthodontic/dental supply

company representatives and orthodontic association websites/courses to some degree to access information for professional development in practice management. A lot of similarity appears here with another investigation's findings as shown in the comparison line in Table 3.4. Shiver (3) found that participants in her study used a variety of practice management information sources with colleagues, professional journals and association courses being the most frequently used. As supported by this study, university courses were less frequently used and qualitative analysis explained that they were not considered an adequate source of practice management information.(3) Orthodontists in Shiver's study also noted that transfer of skills to the workplace, and implementation was difficult following workshop and seminar modes of learning. A difference to note is that 55% of respondents of this study used orthodontic or dental supply company representatives as sources of practice management information while Shiver in 2001 found this to be the least frequently used source at 34%.(3) Perhaps this difference is related to technicalities such as variation within the sample group or the way the question was asked, but it does bring to mind the ever-contentious issue of the corporate influence on the way dentists and dental specialists do business.(14)

Shiver found that 80% of responding orthodontists had taken some practice management continuing education (CE) courses in the 24 months prior to completing her questionnaire, and found no significant difference between orthodontists in this regard as related to years in orthodontic practice. Our respondents felt that the quality of practice management related continuing education courses is lower than the quality of clinical or technology-related courses. In general terms, respondents here, given the opportunity to script their ideal continuing education exposure, would allot about 50% of CE time for clinical topics, about 20% for each of technology and practice management topics, and the remaining 10% for other topics. There is no evidence to support an influence of the amount of business management training provided in school, perceived preparedness for the business challenges faced in the first year of practice, nor the desire for more practice management exposure in school on the preferred topic allocation of continuing education time.

Orthodontic practice functionality appears to be heavily reliant on office systems in this study. All 17 office systems listed scored above 3.0 in "importance to practice". Sequential studies have shown that there has been a strong trend toward the increasing use of various practice management tools, and that the use of some of these tools; written practice philosophies, practice objectives, practice plan, practice budget, an office policy

manual, written job descriptions and a written staff training program, were associated with a higher mean number of case starts as well as a moderate to high net income.(15,16)

Total quality management (TQM) is the term used to describe business processes encompassing a total commitment for continuous improvement on all levels, and the design, development, and the implementation of systems in orthodontic practice is a large component of TQM.(17-19) Frazier(17) defined TQM as "an aggregate of business activities to execute, direct, control, improve, and maintain standards, requirements and needs for all aspects of the business". Other authors have outlined the benefits of the TQM processes and stress the importance of examining every element of the practice to ensure that it is systematically set up to deliver the quality and superb customer service that patients are demanding, in a manner that is both profitable and sustainable.(18,19) It appears that the Canadian orthodontists represented in this data set are acutely aware of the importance of such processes in their orthodontic practices, selecting all of the office systems noted as moderate to highly important to practice.

Respondents were quite divided in their opinion regarding when business and practice management concept introductions should be made. Over fifty percent of respondents agreed that the four systems identified as most important; accounts receivable, recall, delinquent accounts and accounts payable should be introduced in school, as well as patient education systems, measurement of practice productivity, and practice promotion/marketing plan. It may be too huge of an undertaking to provide adequate depth of introduction to key office systems in school, however students should be made aware of TQM processes and their importance in the success and maintenance of orthodontic practice. A study of quality measures in orthodontic practices observes that most orthodontists do not understand the importance of overall quality of service and quality management in their practices.(17) In this light, program administrators would be diligent to explore the possibility of introducing TQM concepts and practices in their practice management curriculums. Introducing these concepts to graduate orthodontic residents will help them understand their purpose and value, as well as help residents understand the process for developing them.(3)

Three quarters of American periodontists responding to a practice management survey felt they needed more information and training to help manage their practices.(5) Similar data is not available in the literature for orthodontists. This study found 68% of respondents perceived the business training provided by their graduate orthodontic

program to be inadequate. United States dental school practice management course directors ranked 39 practice management related topics for their importance for inclusion in a practice management course curriculum for dentists in training.(20) The top five ranked topics were ethics, personnel management, interpersonal skills development, employment options and overhead control. Interestingly, however, all but one of the 39 topics had a mean importance score over 3.0 on a 5-point scale, indicating that they were all important.

The importance of ethics training as a portion of practice management curriculums rose repeatedly in the open ended responses in this study's data as has been mentioned, and one potential barrier to mentorship identified in this study is the "ethical values" of the new orthodontist. Fears that business decisions to improve financial gain will conflict with professionalism and put the trust-based profession at risk are expressed in the literature.(21) The most important mission of dental educators has been said to be the development of student professionalism, and inherent with professional development and the professional way of life is moral principles.(22) Dental schools can send mixed messages about the importance of professionalism to students, and glorify a commercial mentality centered on profit. It is through careful curricular design and delivery that messages of ethical principles and moral values may be communicated to young professionals.(22) Business ethics similarly relayed and mismanagement may leave students without a solid ethical foundation upon which to build their careers.

In response to studies identifying the need for improved business training in Veterinary education, three levels of business training have been incorporated into the Doctor of Veterinary Medicine (DVM) degree at Colorado State University. A combined MBA/DVM degree has been in available since 2002 and adds an fifth year on to the DVM degree, a business certificate program incorporates 20 business course credits into the DVM degree, and finally, the regular curriculum has been infused with career development, practice management and business skills training.(4)

Though the reported results indicate that a significant increase in program length to accommodate business training may be poorly received, and the scope of an MBA style program may be more than is needed for orthodontists preparing for a career in private practice, the innovation of other professions may serve as a model for change in our profession. Most important to our profession should be improving the total quality of care and service we provide to our patients, reducing stress and improving job satisfaction among orthodontist, and ensuring that our professional standards and values

are maintained in this ever changing business environment. Opponents of giving additional attention to business education of orthodontists often cite commercialism, capitalism, and greed as the dangers of a focus on business practices, however this author argues that appropriate business education will serve to keep these very threats to our professionalism in check.

Essential readings in the preparation to alter current curriculums to enhance business skills and practice management training include; "Preparing to practice and manage: A program for educating orthodontic residents in practice management"(2), "Response of a veterinary college to career development needs identified in the KPMG LLP study and the executive summary of the Brakke study: a combined MBA/DVM program, business certificate program, and curricular modifications"(4), and "Template for a recommended curriculum in veterinary professional development and career success"(9). We need not start from scratch. We can build upon the success of others and tailor to suit our specific needs.

3.5 - Conclusions

The study method and response rate here allow conclusions to be drawn about the responding orthodontists represented in the study data only. The objectives of this investigation were to identify: business and practice management topics critical for orthodontic practice success; orthodontists' current sources of practice management information; some of the financial consequences related to perceived inadequate business training; areas of deficiency in the business-related exposure currently provided by graduate orthodontic programs, and to quantify the impact that practice management background has on business related decision making early and later on in an orthodontic career. In addition, it was intended to make key curriculum recommendations to Canadian graduate orthodontic programs as an outcome of this study.

Research Question 1: How does the perceived adequacy of business background relate to the proportion of focus on pursuing business continuing education opportunities in the early years of practice?

- Responding orthodontists rate available practice management continuing education opportunities of significantly lower quality than clinical or technology opportunities.

- No relationship between respondent's preferred allocation of continuing education time and their perceived adequacy of practice management training in graduate school was found.

Research Question 2: How does the perceived adequacy of business background relate to new orthodontists making less sound initial business decisions that have future consequences?

- The impact of perceived inadequate business and practice management background and training is unclear, however a feeling amongst some respondents that business mistakes may have been avoided with better preparations does exist, and the most common impact of these mistakes is financial.

Research Question 3: What are the business areas that are most important to orthodontic practice according to experienced orthodontists?

- Responding orthodontists place high importance on office systems in the functioning of their practices.
- The appropriate content, breadth, and depth of a curriculum in practice management could not be clearly identified by this investigation. A general consensus that more should be taught better exists, however many topics are viewed as best learned to greater depths on the job.
- The idea of replacing the MSc degree currently granted by Canadian graduate programs with an MBA degree is appealing to many, however the scope of an MBA may be too broad.
- Opponents of an MBA/ortho degree worry about loss of scientific grounding of the profession and the loss of adherence to professional codes of ethics in favor of a more corporate mind-set.

Key recommendations to Canadian graduate programs:

- Responding orthodontists perceive high value in a well designed and delivered practice management program offered as a mandatory component of graduate orthodontic programs.
- A structured course in practice management may best be received if it is contained within the current program lengths, or with only a very short extension in program length. Room for additional teaching time may be made in current

graduate orthodontic programs by way of internal restructuring: many the respondents in this study would have been willing to see reallocation of free time, research time and didactic exposure in other areas, however there is little room, in their opinion, to reduce clinical exposure to make room for a structured practice management course.

Additional findings:

- Colleagues are a highly used source of practice management information.
- Accountants and lawyers are frequently part of an orthodontist's professional advisory team, unrelated to the orthodontist's stage of practice.

3.6 – Chapter 2 Tables and Figures

Table 3.1: Main descriptive data of survey respondents

Characteristic	*n*	*%*
Graduation Year	Total = 136	
1969 and earlier	2	1.5%
1970-79	17	12.5%
1980-89	38	27.9%
1990-99	41	30.1%
2000 and later	38	27.9%
Graduation Country	Total = 135	
Canada	93	68.9%
United States	40	29.6%
Other	2	1.5%
How Soon Began to Practice After Graduation	Total = 136	
Within 6 months	123	90.4%
In 7-12 months	8	5.9%
In 13-24 months	3	2.2%
In 25+ months	2	1.5%
Province of Primary Practice	Total = 136	
British Columbia	23	16.9%
Alberta	31	22.8%
Saskatchewan/Manitoba	12	8.8%
Ontario	41	30.1%
Quebec	20	14.7%
Atlantic Provinces	9	6.6%
Type of Primary Practice	Total = 136	
Solo Practice	77	56.6%
Associateship – Associate	9	6.6%
Associateship – Owner	7	5.1%
Partnership	17	12.5%
Cost-sharing Group Practice	22	16.2%
Academic	2	1.5%
Other		

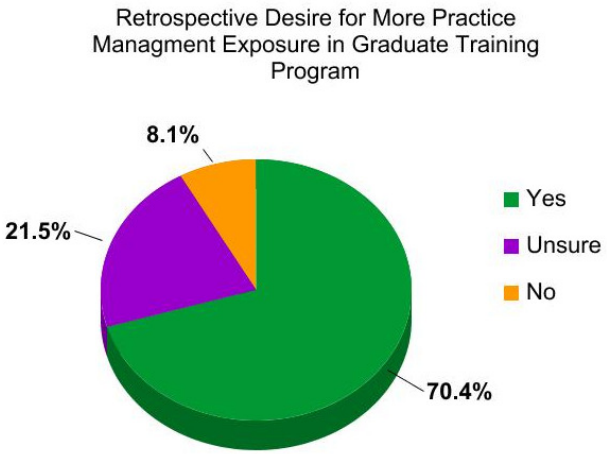

Figure 3.1 – Respondent's retrospective desire to have had more practice management exposure during their graduate orthodontic training. (n = 135)

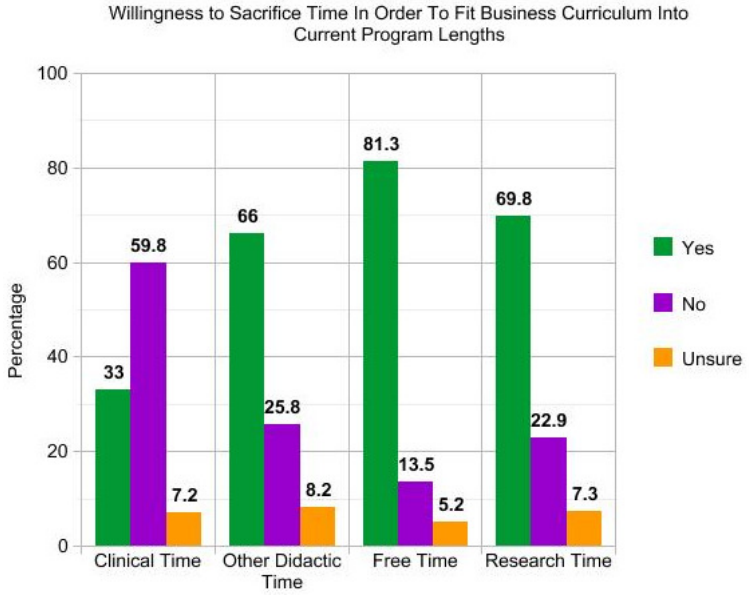

Figure 3.2: Respondents' willingness to sacrifice time in order to accommodate more of a business curriculum within the parameters of current programs. (Clinical and didactic time n = 97, research and free time n = 97)

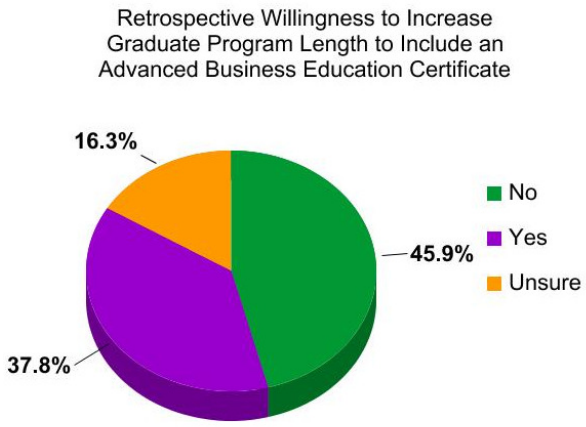

Figure 3.3: Respondent's retrospective willingness to have spent more time in their graduate programs to get certification in advanced business education in addition to their orthodontic qualifications. (n = 135)

Table 3.2: Respondents willingness to mentor a graduate orthodontic resident or new graduate in the area of practice management.

	n	%
Willing to mentor?	Total = 130	
No	12	9.2%
Unsure	33	25.4%
Yes	26	20.0%
Yes, with conditions (below)	59	45.4%
Mentorship conditions (barriers to mentorship) Multiple responses possible	Total = 59	
If resident will not be in direct future competition	37	
If it would not take up too much time	29	
If resident is a potential future practice purchaser/associate etc	25	
If orthodontist would not have to share trade "secrets"	7	
Other*	5	

* Resident's ethical values

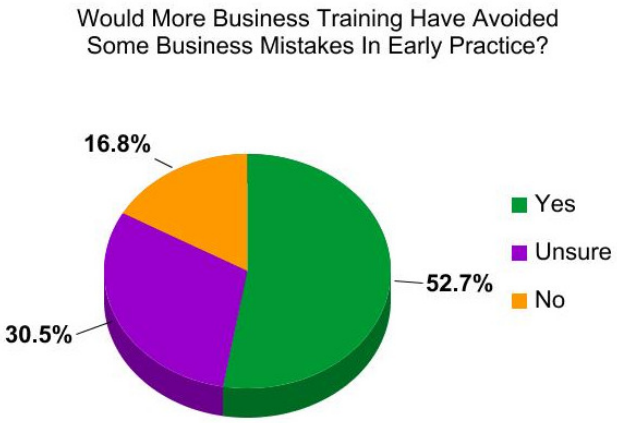

Figure 3.4: Respondents' opinion regarding whether they think more business training in their graduate orthodontic program would have avoided some business related mistakes in early practice. (n = 131)

Table 3.3: Categories of business related mistakes made as perceived to be related to lack of adequate business training

Cost of mistakes	*Number of respondents (out of 69) who selected the cost category*
Financial costs	53 (76.8%)
Stress-related costs	50 (72.5%)
Employee/staff costs	48 (69.6%)
Time-related costs	37 (53.6%)
Job satisfaction costs	22 (31.9%)

Table 3.4: Respondents' prediction of the effect a better business and practice management background before beginning orthodontic private practice would have had for them.

	n	*%*
Improved financial position now	Total = 132	
Yes	60	45.5%
No	27	20.5%
Not sure	45	34.1%
Improved job satisfaction now	Total = 132	
Yes	45	34.1%
No	43	32.6%
Not sure	44	33.3%

Table 3.5: Respondents were asked to estimate how much money they had spent or lost since graduation in four areas.

How much money have you…	*n*	*Percentiles ($)*
…spent directly on business development/practice management related education?	93	25^{th} – 750 **Median – 15,000** 75^{th} – 50,000
…lost in terms of inefficient use of billing professionals (ie: lawyers and accountants) due to lack of preparedness when seeking their assistance?	78	25^{th} – 0 **Median – 5,000** 75^{th} – 25,000
…lost in terms of inefficient or inappropriate use of auxillary staff?	71	25^{th} – 0 **Median– 10,000** 75^{th} – 60,000
…lost in terms of poor negotiating skills (office leases, buy-in contracts etc)?	68	25^{th} – 0 **Median – 10,000** 75^{th} – 50,000

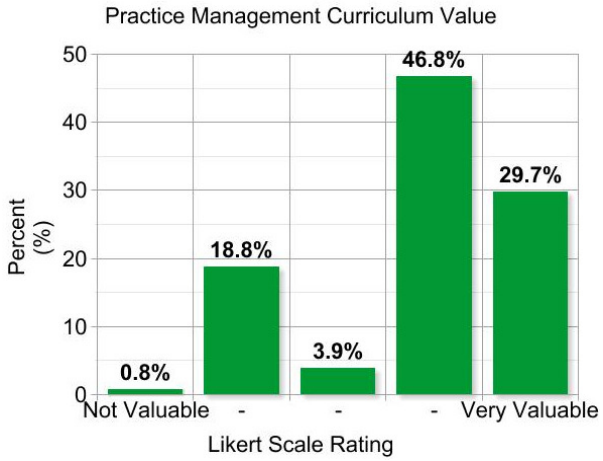

Figure 3.5: Rating distribution of value of a well designed and delivered practice management curriculum offered as a mandatory component of graduate orthodontic programs. (n = 128)

Table 3.6: Sources of information for professional development in practice management rated by amount of use on a 5-point scale (where 1 = Not used at all, and 5 = Used primarily)

		Use Score – Sources of Practice Management Information	
Item	*n*	*Mean*	*SD*
Colleagues	131	3.69	1.24
Orthodontic conferences	130	3.15	1.06
Professional journals	130	2.77	1.20
Books	129	2.49	1.20
Study clubs	129	2.48	1.40
Other *	17	2.29	1.65
Practice management/consulting company	130	2.26	1.33
Supply company sponsored seminars/events	127	2.25	1.18
Advisory team	126	2.08	1.32
Orthodontic association websites/courses	129	2.02	1.18
Orthodontic/Dental supply company representatives	130	1.95	1.06
University courses	129	1.88	1.15
General dentistry conferences	127	1.46	0.73

*Other responses included accountants, experience, management consultant, family/friend, Bottom line course, long term training group, university courses.

Table 3.7: Sources of practice management information: Comparison of the percent of people who selected "do not use at all" in this study, with findings from a previous study(3). Categories that did not match were separated below. Order from most to least often used as found in this study.

Current study category name	Percent who did not use at all	Comparison study category name (3)	Percent who did not use at all
Orthodontic conferences	6.2%	Not applicable	-
Colleagues	7.6%	Colleagues	4%
Professional journals	20.8%	Professional journals	8%
Books	25.6%	Books	34%
Supply company sponsored seminars/events	34.6%	Not applicable	-
Study clubs	37.2%	Study clubs	45%
Practice management/consulting Company	42.3%	Consultant	49%
Orthodontic/Dental supply company representatives	45.4%	Supply Rep	66%
Orthodontic association websites/courses	45.7%	Association courses	13%
University courses	51.9%	University courses	49%
Advisory team	52.4%	Not applicable	-
General dentistry conferences	64.6%	Not applicable	-
Not applicable	-	Seminars/Workshops	15%
Not applicable	-	Trade Journals	32%

The short line above indicates the division where less than 50% use these sources of practice management information.

Table 3.8: Professionals essential for an orthodontist's advisory team as they transition to practice, and those professionals currently on respondents' advisory team.

Professional	*Number of respondents who selected this professional as essential for transition to practice*	*Number of respondents who selected this professional as currently on their advisory team*
Accountant	129	127
Lawyer	115	103
Bank/lender	98	76
Tax advisor	80	60
Financial planner	80	83
More mature/retired orthodontist	77	26
Insurance adviser/risk manager	75	68
Experienced orthodontic office Manager	56	39
Investment planner	47	63
Practice management consultant	42	21
Orthodontic supply company representative	42	40
Estate planner	38	40
Colleague/business partner	29	37
Cash flow manager	28	7
Dental supply company representative	15	16
Other*	4	6

* Human resources advisor, leasing consultant

Table 3.9: Preferred distribution of continuing education time in percent (%) if respondents could script their own exposure.

Topic	*n*	
Clinical Topics	131	Mean – 53.4 SD – 16.0 **Median – 50** Max – 90 Min – 20
Technology Topics	123	Mean – 21.6 SD – 9.6 **Median – 20** Max – 50 Min – 1
Practice/Business Management Topics	130	Mean – 23.0 SD – 11.9 **Median – 20** Max – 60 Min – 5

* Other responses included general dentistry/multidisciplinary treatment, other health sciences, motivation/personal growth, photography

Table 3.10: Importance of various systems in orthodontic practice as rated on a 5-point scale where 1 = Very unimportant and 5 = Very important, and when these basic principles should be introduced (at school, on the job). The means for the same categories when the same question was asked in another study are included for comparison(3)

	Importance Score			*Where to introduce*		
Item	*n*	*Mean*	*Comparison study mean**	*n*	*At School*	*On Job*
Accounts receivable System	131	4.63	4.40	131	**57.3%**	42.7%
Recall system	131	4.54		131	**52.7%**	47.3%
Delinquent accounts System	131	4.49	4.36	131	**57.3%**	42.7%
Accounts payable system	131	4.47	4.28	129	**53.5%**	46.5%
Referral tracking system	131	4.31	4.09		45%	**55%**
Patient education system	130	4.11		130	**68.5%**	31.5%
Continuing education Program	129	4.10	3.79	128	42.2%	**57.8%**
Measurement of practice Productivity	127	4.03	4.06	128	**55.5%**	44.5%
Office policy/procedure Manual	130	3.90	4.06	129	39.5%	**60.5%**
Staff salary/benefits Program	129	3.87	4.18	131	31.3%	**68.7%**
Written job descriptions	130	3.85	3.89	130	37.7%	**62.3%**
Individual performance Appraisals	129	3.74	3.92	129	34.1%	**65.9%**
Practice promotion, marketing plan	130	3.72	3.87	130	**59.2%**	40.8%
Written staff hiring, Training program	128	3.62	3.62	127	47.2%	**52.8%**
Written practice objectives	129	3.28	3.59	130	41.5%	**58.5%**
Written philosophy of Practice	130	3.25	3.67	131	42.75	**57.3%**
Written practice budget	129	3.18	3.54	128	46.1%	**53.9%**

*(3)

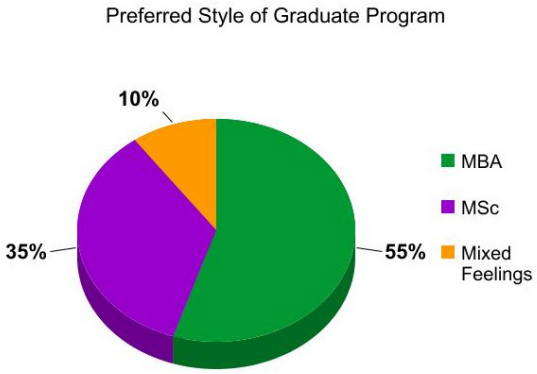

Figure 3.6: Respondents' opinion regarding the way they would have preferred to have their graduate orthodontic training program structured. (n = 103)

3.7 – Bibliography

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Chapter Four

General Discussion

4.1 - Discussion and Answers to Research Questions

The overall purpose of this research project was to assess Canadian orthodontists' perceptions of how well their graduate orthodontic program prepared them for the business aspects of orthodontic practice and to identify how any perceived deficiencies may have affected the orthodontist or his/her career. The goal was to identify topics in business and practice management that are important to orthodontic practice so key curriculum recommendations in the area of practice management may be made to Canadian graduate orthodontic programs. Due to lack of existing published data directly related to the topic at hand, data from other professions, unpublished dissertations, opinion articles and data gathered through direct contact with practicing orthodontists was used in the design and development of the research tool used here.

The objectives of this investigation were:

1. To qualify the current level of business and practice management exposure in Canadian graduate orthodontic programs by way of direct contact with program directors.
2. To identify challenging and stressful areas of practice and relate to perceived adequacy of business training
3. To identify business and practice management topics critical for orthodontic practice success.
4. To identify orthodontists' current sources of practice management information
5. To identify some of the potential financial consequences related to perceptions of inadequate business training.
6. To quantify the impact that practice management background has on business related decision making early and later on in an orthodontic career.
7. To identify areas of deficiency in the business-related exposure currently provided by graduate orthodontic programs.
8. To make key curriculum recommendations to Canadian graduate orthodontic programs.

Research Question # 1 - Do graduate orthodontic education programs adequately prepare new orthodontists for the business of orthodontics? (Relates to objectives 1, 3, and 7)

Insight to answer this question was gleaned from multiple sources. Canadian graduate orthodontic programs were directly contacted for information on any business or practice management teaching they provided, and survey participants were asked

questions to address their sense of preparedness for the business challenges of orthodontic practice upon graduation. Answers to questions that essentially asked "did you get enough information" and "would you have wanted more information" were combined to get a sense of the overall feeling of preparedness for business practice amongst responding orthodontists.

- Canadian graduate programs currently do not offer formal practice management courses, however four of the five programs were able to provide a practice management course syllabus. The hours, breadth and depth of these courses are varied.
- Canadian orthodontists profiled here largely perceived that graduate programs have not been adequately preparing new orthodontists for the business aspects of orthodontics. Many report feeling unprepared for the business challenges experienced in the early years of practice, and a large majority would have preferred a graduate orthodontic program that would have devoted more time to formal business-related training. This feeling is independent of both graduation year, and the country from which they received their orthodontic training.

Research Question #2 - How does the perceived adequacy of business background relate to the amount stress experienced in the early years of practice? (Relates to objective 2)

Drawing on past research that indicated one of the least satisfying aspects of orthodontic practice was practice management(1), and indicators that some practice management issues may contribute to an orthodontist's stress, this study sought to identify any relationships between practice stress experienced and perceived adequacy of business and practice management training. Relationship were evaluated between respondent's perceived preparedness for orthodontic practice at graduation, and their recalled stress levels in the first five years of orthodontic practice.

- Practice related stress is interpreted to be decreased with experience in practice in our population, but still remained of significance to orthodontists.
- Of the four main current sources of stress in orthodontic practice, three relate to practice management: staff management, marketing and time management.
- This research did not identify any statistically significant relationship between preparedness for the business of orthodontics and practice-related stress levels experienced in the first five years of practice.

Research Question #3 - How does the perceived adequacy of business background relate to the proportion of focus on pursuing business continuing education opportunities in the early years of practice? (Relates to objectives 4 and 6)

When conducting background research for this study, the author hypothesized that a new graduate, leaving school feeling clinically competent but not competent for orthodontic business tasks may choose to focus their continuing education time and energies on pursuing business excellence in the early years of practice. A relationship between the focus of continuing education energies and feelings of preparedness for the business of orthodontics upon graduation was sought.

- Responding orthodontists rate available practice management continuing education opportunities of significantly lower quality than clinical or technology opportunities.
- No relationship between respondent's preferred allocation of continuing education time and their perceived adequacy of practice management training in graduate school.

Research Question #4 - How does the perceived adequacy of business background relate to new orthodontists making less sound initial business decisions that have future consequences? (Relates to objectives 5 and 6)

Statistics Canada cites poor planning and poor management as two major sources of early small business failure (www.ic.gc.ca/sbstatistics). It is reasonable to consider that orthodontists, graduating without adequate knowledge, skills and abilities to plan and run a practice, may find their business struggling for years to come. It was difficult to come to a definitive conclusion to answer this question based on the results of the survey. One long-term consequence that was hoped to be examined was "gross income", however as previously reported, there were some unforeseen issues in the collection on gross income reports from respondents that left this data possibly tainted and it was therefore excluded from any direct analyses.

- The impact of perceived inadequate business and practice management background and training is unclear, however a feeling amongst some respondents that business mistakes may have been avoided with better preparations does exist, and the most common impact of these mistakes is financial.

Research Question #5 - What are the business areas that are most important to orthodontic practice according to experienced orthodontists? (Relates to objectives 3 and 8)

Both open and closed-ended questions were used to seek answers to this research question. Information about current practices of orthodontists was gathered, orthodontists were asked to score the importance of various topics and orthodontists were asked to elaborate on practice management topic areas that they felt should surely be covered in school as well as those that would best be learned on the job. One topic, staff management, was clearly identified as important to know, however orthodontists were divided about when it should be taught. Some felt aspects of staff management should be learned in school while others felt in school was too early and the value would be diminished by the time of actual application.

- Responding orthodontists place high importance on office systems in the functioning of their practices.
- The appropriate content, breadth, and depth of a curriculum in practice management could not be clearly defined by this investigation. A general consensus that more should be taught better exists, however many topics are viewed as best learned to greater depths on the job.
- The idea of replacing the MSc degree currently granted by Canadian graduate programs with an MBA degree is appealing to many, however the scope of an MBA may be too broad. More research is needed in this area.
- Opponents of an MBA/ortho degree worry about loss of scientific grounding of the profession and the loss of adherence to professional codes of ethics in favor of a more corporate mind-set.

4.2 - Comments on survey methodology and response rate

A survey instrument is a measurement tool designed to collect data accurately and reliably.(2) The key here is "accurately and reliably" and it is important to ensure that the measurement tool accurately measures what it is intended to measure.(2) The process of ensuring this accuracy is called "validating" the survey, and it is the responsibility of the primary investigator to ensure the survey's validity prior to its use. There are multiple ways of ensuring validity. The simplest means is to reuse or adapt an already validated questionnaire.

It was not possible to locate a previous survey that could answer all of the research questions, so with the research questions in mind, the primary investigator adapted portions or multiple surveys as well as created new questions to combine to address the study questions. The survey was then checked for face validity by the primary investigator. This is the process of looking at the survey tool and reflecting on whether it "makes sense" and is relevant to the research project.(2) Because this is a questionable approach to establishing validity and is subject to bias, a second method was also used. Content validity was checked via pilot testing with six orthodontists instructed to review the questionnaire for content, structure, and applicability to the research questions. The outcome of this validation was adjustment of questions as needed.

4.2.1 - Survey methodology: Sampling and response rate

An attempt was made to sample the entire population of Canadian Orthodontists, thus dramatically reducing sampling error in this study. It is important to note that the last update to the working list of Canadian orthodontists was made in October 2009. Any licensees added after this time would have been excluded form this study, as well as any orthodontists who were not publicly listed with their provincial licensing body. In addition, since the survey was only English, those orthodontists not fluent in written English would have had reduced access to the study tool.

Though efforts were made to improve the response rate in this study, the dominating problem in this investigation comes from survey non-response. Non-response biased this investigation by making the results less representative of the whole population(3), and it is not possible to know if there are important differences between those who did and did not respond. The present study was the first university-based online survey that the author is aware of to be distributed to all Canadian orthodontists. There are many possible explanations for the comparably low response rate in this study, the dominating possibilities including: mode of survey distribution, respondent fatigue, lack of tangible benefit, and disinterest in the study topic.

Survey based research is additionally limited in that survey results will vary with the care and attention each participant uses while they are completing the questionnaire. Data can be skewed by inappropriate responses due to lack of understanding or attention to detail however there is no known way to account for this in the data analysis. Because of this, surveys are best suited for obtaining general overview information about a population, rather than to gain a deep understanding.(2)

4.2.2 - Representative Sample

Table 4.1 compares descriptive data from two recent surveys of the same population of Canadian orthodontists. A general agreement in the proportion of male respondents, and distribution of respondents by province and mode of primary practice can be seen. Both comparable studies have higher response rates than the current study, however it appears that a similar distribution of subjects responded to all three studies, so we can assume that we have a representative sample of Canadian orthodontists' opinions within the current data set. Descriptive data for this study (Appendix F) indicates that a broad spectrum of respondents are represented in the data.

Table 4.1: Comparison of some descriptive data from this study, Roth's 2002 study(1), and Palmer's 2004 study(4)

Comparable	Current Study (2009)	Palmer (2004)	Roth (2002)
	%	%	%
Response Rate	19.1	45.6	51.2
Male Gender	78.7	n/a	84.3
From British Columbia	16.9	21.1	19.3
From Alberta	22.8	16.7	10.5
From Saskatchewan/Manitoba	8.8	5.5	6.8
From Ontario	30.1	36.4	40.8
From Quebec	14.7	14.9	17.0
From Atlantic Provinces	6.6	5.5	5.6
Solo Practice	56.6	65.5	65
Associateship – Associate	6.6	8.1	6.9
Associateship – Owner	5.1	n/a	6.9
Partnership	12.5	9.5	12.9
Costsharing Group Practice	16.2	14.4	5.7
Academic	1.5	3.2	2.5

4.3 - Major Conclusions

The following major conclusions were made from the results of this study:

- Canadian orthodontists profiled here largely perceived that graduate programs have not been adequately preparing new orthodontists for the business aspects of orthodontics. Many report feeling unprepared for the business challenges experienced in the early years of practice, and a large majority would have preferred a graduate orthodontic program that would have devoted more time to

formal business-related training. This feeling is independent of both graduation year, and the country from which they received their orthodontic training.

- The main current sources of stress for respondents in orthodontic practice are identified as staff management, satisfying patients, marketing and time management.
- The knowledge, skills and abilities that presented the most challenge for respondents in the transition from graduate school to orthodontic practice fall into the general categories of leadership, staff management, practice promotion, planning, quality care and time management.
- Responding orthodontists perceive high value in a well designed and delivered practice management program offered as a mandatory component of graduate orthodontic programs.
- A structured course in practice management may best be received if it is contained within the current program lengths, or with only a very short extension in program length. Room for additional teaching time may be made in current graduate orthodontic programs by way of internal restructuring: many the respondents in this study would have been willing to see reallocation of free time, research time and didactic exposure in other areas, however there is little room, in their opinion, to reduce clinical exposure to make room for a structured practice management course.
- Responding orthodontists rate available practice management continuing education opportunities of significantly lower quality than clinical or technology opportunities.
- The idea of replacing the MSc degree currently granted by Canadian graduate programs with an MBA degree is appealing to many, however the scope of an MBA may be too broad.
- Opponents of an MBA/ortho degree worry about loss of scientific grounding of the profession and the loss of adherence to professional codes of ethics in favor of a more corporate mind-set.

4.4 – Future Research

A graduate orthodontic program needs not start a-new if they wish to design and implement a business or practice management curriculum. Other orthodontic educational programs and other healthcare professions have taken steps upon from which future

programs may build.(5-7) It would be valuable to further evaluate the success of in-progress programs by way of gathering student's perspectives, recent graduate's perspectives, and the perspectives of the teachers and directors of these programs and use this feedback to modify the design and structure for future endeavors. It has been said that there are many ways to attempt to determine the effectiveness of a practice management curriculum, including feedback from current students and recent graduates, surveys of more established practitioners, comparisons of curricula between schools, and establishing national standards.(8)

A basic curriculum could be developed using information from this and other aforementioned studies and combined with a particular graduate programs goals and resources, and the curricular template could be evaluated by current students and recent graduates before implementation. Once a basic curriculum structure has been implemented plans for continued evaluation, modification and growth with input from students, instructors and past students in retrospect. It would be useful to question current students and recent graduates from Canadian graduate orthodontic programs for their perceived needs in and desire for a formal business or practice management course.

Further research in the areas of alternative means of communicating educational materials could also prove beneficial. Programs could work together and with orthodontic to produce a comprehensive series of multimedia courses which could be shared between schools for the benefit of students. This may alleviate some of the financial and human resource concerns that programs will ultimately face in the addition of additional teaching materials to any established program. Programs could also reach out more officially to established orthodontists and tap into the mentorship potential in this population in the interest educational progress.

4.5 – Final Comments

This study confirms a general feeling in the literature that graduate orthodontic programs may not be adequately preparing new orthodontists for the business aspects of orthodontic practice. In efforts to graduate fully competent orthodontists with the skills and abilities needed to succeed at all aspects of practice, it is timely for graduate programs to consider developing and incorporating formal business and practice management curricula into the graduate orthodontic academic experience. This author proposes that, if taught appropriately, the tools learned in such a business-minded

program may work against the fears of opponents, and better equip new graduates to function as grounded and ethical business citizens.

4.6 - Bibliography

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Appendices

Appendix A: Ethics Approval

Health Research Ethics Board

308 Campus Tower
University of Alberta, Edmonton, AB T6G 1K8
p. 780.492.9724 (Biomedical Panel)
p. 780.492.0302 (Health Panel)
p. 780.492.0459
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Amendment Approval Form

Date:	December 24, 2009
Principal Investigator:	Paul Major
Study ID:	MS1_Pro00004926
Study Title:	How can Canadian graduate orthodontic programs better prepare new orthodontists for the business of orthodontics?
Sponsor/Funding Agency:	McIntyre Fund - Department of Dentistry Internal funds Graduate Orthodontic Program
Approval Expiry Date:	May 18, 2010

Thank you for submitting an amendment for the above study to the Health Research Ethics Board - Health Panel. This amendment has been reviewed and approved on behalf of the committee. The following has been approved:

- Revised study end date to 3/1/2010
- Increase in number of participants to 700 with 350 participants acting as controls.
- Questionnaire (12/20/09)

Note: Approval for an **amendment** does not change the original approval date of a study.

Sincerely,

Glenn Griener, Ph.D.,
Associate Chair, Health Research Ethics Board - Health Panel

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix B: Letter to Program Directors

UNIVERSITY OF ALBERTA

Dentistry and Dental Hygiene
Excellence in Dental Health

Masters Thesis: How can Canadian orthodontic residency programs better prepare their newly graduated orthodontists for the business challenges of orthodontic practice?

Supervisor – Dr Paul Major
Email – xxxx@ualberta.ca
Phone – 780-XXX-XXXX
Masters Student – Dr Marguerite Ntiamoa Duncan
Email – xxxx@ualberta.ca
Phone – 780-XXX-XXXX

Letter to Canadian Graduate Orthodontic Program Directors

Dear Dr ,

My name is Marguerite Ntiamoa Duncan. I am a Graduate Orthodontic Resident at the University of Alberta. I write to request your assistance.

My Masters Thesis is an investigation into the business educational needs of orthodontists and an attempt to identify areas where Canadian graduate orthodontic programs can modify or improve their business curriculums to better meet these needs.

In this effort, it is important to establish baseline information about the current business-related exposure provided in our Canadian programs. I am requesting this information from each Graduate Orthodontic program director. I will be sure to summarize this information in a generalized context and will not identify the individual details provided by each program.

Could you please provide me with the following information:

- Details regarding the business/practice management curriculum provided as part of your Graduate Orthodontic Program, including approximate hours of exposure, student projects/assignments, and modes of evaluation (if any).
- A list of any of your program's recommended practice-management related reading materials.
- A list of experts and/or guest speakers to which you ensure your students are exposed.
- A list of external programs which your program encourages your students to attend (ie: 3M Bottom Line Course).
- Any other information you feel may be helpful.

Thank you in advance for your time and assistance. The information you provide will be very valuable to this project. I will ensure that a detailed summary of the results and suggestions of my study is provided to each Canadian program.

Department of Dentistry
Faculty of Medicine and Dentistry
Dentistry/Pharmacy Centre • University of Alberta • Edmonton • Canada • T6G 2N8

This study has been approved by the University of Alberta Human Research Ethics Board. Their contact phone number is 780-492-0302.

Please feel free to contact me by phone, email or regular mail if you have any questions or concerns. Thank you for your time and assistance.

Sincerely,

Marguerite Ntiamoa Duncan
BSc, DDS, MSc Candidate (University of Alberta)

Orthodontic Graduate Program
Department of Dentistry
Faculty of Medicine & Dentistry
4051B Dentistry/Pharmacy Centre
Edmonton, Alberta
T6G 2B8

xxxxxxx@ualberta.ca
Direct Phone: (780)XXX-XXXX

Appendix C: Final Questionnaire

Survey

BACKGROUND

1.) Are you an orthodontist currently practicing in Canada?

- ○ Yes
- ○ No (please do not proceed any further)

2.) What is your gender?

- ○ Male
- ○ Female

3.) What year did you graduate from your post-graduate orthodontic training?

[ ]

4.) In which province is your primary practice?

[British Columbia ▾]

5.) Where did you receive your post-graduate orthodontic training?

- ○ From a Canadian graduate orthodontic program
- ○ From an American graduate orthodontic program
- ○ Other

6.) How soon after graduation did you begin working as an orthodontist?

- ○ Within the first 6 months
- ○ In 7-12 months
- ○ In 13-24 months
- ○ 25+ months

If you did not begin working within the first 6 months what was the main cause of your delay in beginning orthodontic practice? (choose the most appropriate answer)

- ○ Financial issues
- ○ Licensing issues
- ○ Family/personal issues
- ○ Moved to a new location
- ○ Did not begin the process of planning future practice early enough
- ○ Difficulties with the planning process
- ○ Other (please specify) [ ]

7.) Which of the following best describes your current primary orthodontic practice or position?

- ○ Solo practice
- ○ Associateship – you are the associate
- ○ Associateship – you are the practice owner
- ○ Partnership
- ○ Cost-sharing group practice
- ○ Academic
- ○ Other (please specify) [ ]

8.) Including yourself, how many orthodontists work in your primary practice?

[1 ▾]

9.) How many full time equivalents of each of the following types of auxillaries are employed at your primary practice?

Reception/Secretarial staff	
Patient-care coordinators	
Business managers	
Chair-side staff	
Laboratory Technicians	
Infection control/sterilizing staff	
Other	

10.) How many treatment chairs do you normally operate in your office?

Exam	
Records	
Consult	
Active Treatment	
Other	

11.) How would you rate the competitiveness of the business environment in which your primary practice is located?

- ○ Highly competitive
- ○ Moderately competitive
- ○ Slightly competitive
- ○ Not competitive at all

12.) How many hours do you work in orthodontics during the average working week?

_____ hours per week

13.) How many weeks do you work during the average year?

_____ weeks per year

14.) What is the annual gross income from your portion of your orthodontic practice? (Please be reminded that this is an anonymous survey and no individual results will be reported)

Less than $200,000

15.) Approximately how many new full fixed orthodontic therapy patients do you start treatment for each year?

_____

16.) If you own your own orthodontic practice: (if you do not own, please skip)

a. How many years after graduation did you become an owner? (If you became an owner within the first year please report "0" here)

_____

b. How many orthodontic practices do you currently own? _____

STRESS

17.) How stressful would you consider your first up to five years of orthodontic practice were/are?

- ○ Not/Mildly stressful
- ○ Moderately stressful
- ○ Highly stressful
- ○ Extremely stressful

18.) If you graduated before 2004 what is your current level of orthodontic practice-related stress? (If you graduated in or after 2004 please move to the next question)

- ○ No/Mild stress
- ○ Moderate stress
- ○ High stress
- ○ Extreme stress

19.) From the list below, please rate the amount of stress that is currently created by each of the following in your orthodontic career.

		Not Stressful	-	-	-	Highly Stressful	N/A
a.)	Dealing with financial institutions/lenders	○	○	○	○	○	○
b.)	Dealing with orthodontic supply companies	○	○	○	○	○	○
c.)	Staff management	○	○	○	○	○	○
d.)	Attracting patients	○	○	○	○	○	○
e.)	Satisfying patients	○	○	○	○	○	○
f.)	The pace of work	○	○	○	○	○	○
g.)	Clinical decision-making "on your feet"	○	○	○	○	○	○
h.)	Budgeting	○	○	○	○	○	○
i.)	Tax planning	○	○	○	○	○	○
j.)	Negotiating leases on professional space	○	○	○	○	○	○
k.)	Negotiating leases on professional equipment	○	○	○	○	○	○
l.)	Gaining respect from staff	○	○	○	○	○	○
m.)	Gaining respect from patients	○	○	○	○	○	○
n.)	Gaining respect from referring professionals	○	○	○	○	○	○
o.)	Marketing yourself in the community	○	○	○	○	○	○
p.)	Office document development (systems implementation)	○	○	○	○	○	○
q.)	Negotiating contracts to associate, transition or purchase an existing practice	○	○	○	○	○	○
r.)	Time management	○	○	○	○	○	○

Now rate how challenging each item was for you in the transition from graduate school to orthodontic practice.

		Not Challenging	-	-	-	Highly Challenging	N/A
a.)	Dealing with financial institutions/lenders	○	○	○	○	○	○
b.)	Dealing with orthodontic supply companies	○	○	○	○	○	○
c.)	Staff management	○	○	○	○	○	○
d.)	Attracting patients	○	○	○	○	○	○
e.)	Satisfying patients	○	○	○	○	○	○
f.)	The pace of work	○	○	○	○	○	○
g.)	Clinical decision-making "on your feet"	○	○	○	○	○	○
h.)	Budgeting	○	○	○	○	○	○
i.)	Tax planning	○	○	○	○	○	○
j.)	Selecting a practice to join/buy	○	○	○	○	○	○
k.)	Deciding that you would build your own practice from scratch	○	○	○	○	○	○
l.)	Figuring out how to join/buy a practice	○	○	○	○	○	○
m.)	Figuring out how to begin the process of building your own practice	○	○	○	○	○	○

n.)	Negotiating leases on professional space	○	○	○	○	○	○
o.)	Negotiating leases on professional equipment	○	○	○	○	○	○
p.)	Gaining respect from staff	○	○	○	○	○	○
q.)	Gaining respect from patients	○	○	○	○	○	○
r.)	Gaining respect from referring professionals	○	○	○	○	○	○
s.)	Marketing yourself in the community	○	○	○	○	○	○
t.)	Office document development (systems implementation)	○	○	○	○	○	○
u.)	Negotiating contracts to associate, transition or purchase an existing practice	○	○	○	○	○	○
v.)	Time management	○	○	○	○	○	○

PRACTICE MANAGEMENT EXPOSURE

20.) Prior to entering dentistry, did you receive any formal business training or have any business or managerial experience?

○ No
○ Yes. Explain: _____

21.) Prior to entering dentistry, did you work in another profession?

○ No
○ Yes. What profession? _____ For how long? _____

22.) Prior to beginning your orthodontic training program, did you practice general dentistry in a private practice setting?

○ No (proceed to question 23)
○ Yes
For how long? _____
Did you own your own clinic?
○ No
○ Yes
Did you:
○ Buy-in to an existing clinic
○ Build from scratch
○ Other. Explain: _____

23.) Upon completion of your graduate orthodontic program, did you have a realistic expectation as far as:

a. Your future financial earning potential?
○ Yes (proceed to part b)
○ No.
Did you:
○ Over estimate this potential?
○ Under estimate this potential?
○ Unsure

b. Your future financial needs?
○ Yes (proceed to question 24)
○ No.
Did you:
○ Over estimate this need?
○ Under estimate this need?
○ Unsure

24) Please choose the answer that best describes the business and practice management-related exposure provided to you by your graduate orthodontic program over the duration of the program:

- None (0 formal hours)
- A small amount (few formal hours)
- A moderate amount (formal hours approximately equal to less than a one semester course)
- A lot (formal hours approximately equal to a one to two semester course)
- Too much

25) What form of exposure did you receive? (If you answered none to question 24 skip this question)

	Not at all	-	-	-	Primary mode of exposure
a.) Lecture based by experienced orthodontists					
b.) Lecture based by specialists in each area (lawyers etc)					
c.) Business basics					
d.) Orthodontic-specific business issues					
e.) Mentorship by established orthodontists/office visits					
f.) Exposure to practice consultants					
g.) Experiential (ie: mock business planning scenarios, design a business plan/associateship agreement)					
h.) Immersion-type (ie week-long business-only conference/seminar vs year long course)					
i.) Clinical experience designed to mimic private practice					
j.) Other					

26.) Was the amount of business/PM exposure as indicated above enough to prepare you to feel comfortable with the business development and practice management related challenges you faced in the first:

a. One year of practice?
- Yes
- No

b. 2-3 years of practice?
- Yes
- No

c. 4-5 years of practice?
- Yes
- No

27.) If you were to do your specialty training again, would you prefer a program that would devote more hours to formal business training via a structured practice management and business background curriculum?

- Not Sure (Proceed to question 28)
- No (Proceed to question 28)
- Yes

  Would you still prefer this program if it meant sacrificing some hours of:

  a) Clinical exposure
  - Yes
  - No
  - Not Sure

  b) Didactic exposure in other areas
  - Yes
  - No
  - Not Sure

  c) Free time
  - Yes
  - No
  - Not Sure

d) Research time
- ○ Yes
- ○ No
- ○ Not Sure

e) Other (comment here) _____

28.) In retrospect, would you have been willing to spend extra time in your post-graduate orthodontic training program (for example, 3 -6 additional months of program length) to obtain some sort of certification in advanced business education in addition to your orthodontic qualifications?

- ○ Not Sure (Proceed to question 29)
- ○ No (Proceed to question 29)
- ○ Yes

What would be the maximum amount of extra time you would have been willing to commit to?
_____ month(s)

PRACTICE MANAGEMENT NEEDS

29.) In the continuing education courses you have attended since graduation, how adequately were the following topics covered:

	Not Covered	-	-	-	Very Well Covered
a.) Clinical topics	○	○	○	○	○
b.) Technological advancements	○	○	○	○	○
c.) Practice/Business management	○	○	○	○	○

30.) How would you like to divide your continuing education (CE) time if you had the option to script your own exposure?

_____ % of CE time spent on clinical topics
_____ % of CE time spent on technology topics
_____ % of CE time spent on practice/business management topics
_____ % of CE time spent on other topics (specify) _____

31.) What are your preferred sources of information for your professional development in practice management? (please rate each option based on amount of use)

	Not used at all	-	-	-	Used primarily
a.) Professional friend/ business partner/professional mentor (Colleagues)	○	○	○	○	○
b.) Practice management/consulting company	○	○	○	○	○
c.) Orthodontic conferences	○	○	○	○	○
d.) General dentistry conferences	○	○	○	○	○
e.) Orthodontic association websites/courses	○	○	○	○	○
f.) Advisory team	○	○	○	○	○
g.) Orthodontic/Dental supply company sponsored seminars/events	○	○	○	○	○
h.) Orthodontic/Dental supply company representatives	○	○	○	○	○
i.) Study clubs	○	○	○	○	○
j.) University courses	○	○	○	○	○
k.) Books	○	○	○	○	○
l.) Professional journals	○	○	○	○	○
m.) Other _____	○	○	○	○	○

32.) Which professionals would you consider essential for an orthodontist's professional advisory team as he or she transitions from graduate school to orthodontic practice? (choose all that apply)

- ☐ Accountant
- ☐ Lawyer
- ☐ Tax Advisor
- ☐ Insurance Advisor/Risk Manager
- ☐ Bank/Lender
- ☐ Financial Planner
- ☐ Estate Planner
- ☐ Investment Planner
- ☐ Cash Flow Manager
- ☐ Practice Management Consultant
- ☐ Experienced Orthodonic Office Manager
- ☐ Orthodontic Supply Company Representative
- ☐ Dental Supply Complany Representative
- ☐ A More Mature or Retired Orthodontist
- ☐ Colleague/Business Partner (if not the same as above)
- ☐ Other
- ☐ Other
- ☐ Other

33.) Which professionals are currently on your professional advisory team? (choose all that apply)

- ☐ Accountant
- ☐ Lawyer
- ☐ Tax Advisor
- ☐ Insurance Advisor/Risk Manager
- ☐ Bank/Lender
- ☐ Financial Planner
- ☐ Estate Planner
- ☐ Investment Planner
- ☐ Cash Flow Manager
- ☐ Practice Management Consultant
- ☐ Experienced Orthodonic Office Manager
- ☐ Orthodontic Supply Company Representative
- ☐ Dental Supply Complany Representative
- ☐ A More Mature or Retired Orthodontist
- ☐ Colleague/Business Partner (if not the same as above)
- ☐ Other
- ☐ Other
- ☐ Other

34.) If you had received more business related training and exposure during your graduate training, do you think you would have avoided some business related mistakes you made in the past?

- ○ No (proceed to question 35)
- ○ Not Sure (proceed to question 35)
- ○ Yes.

  What were the categories of the costs of such mistakes? (Choose all that apply)
  - ☐ Financial costs
  - ☐ Stress related costs
  - ☐ Employee/staff costs
  - ☐ Job satisfaction costs
  - ☐ Time-related costs
  - ☐ Other

35.) Do you think you would now be better off financially if you had had a better business and practice management background before beginning orthodontic private practice?

- ○ Yes
- ○ No
- ○ Not Sure

36.) Do you think you would now be happier in your professional life/have greater job satisfaction if you had had better business and practice management background before beginning orthodontic private practice?

- ○ Yes
- ○ No
- ○ Not Sure

37.) Since graduation, approximately how much money have you: (This is often a difficult question to answer – a broad estimation here will suffice)

Spent directly on business development/practice management related education?
$

Lost in terms of inefficient use of billing professionals (ie: lawyers and accountants) due to lack of preparedness when seeking their assistance?
$

Lost in terms of inefficient or inappropriate use of auxillary staff?
$

Lost in terms of poor negotiating skills (office leases, buy-in contracts, etc)?
$

38.) How valuable would it have been to you to have a well designed and delivered practice management curriculum offered as a mandatory component of your graduate orthodontic program?

Not valuable	Somewhat valuable	Neither valuable nor invaluable	Valuable	Very valuable
○	○	○	○	○

39.) Would you be willing to mentor a graduate orthodontic student or new graduate and share your practice management knowledge and practices with them? (please select the most appropriate and honest answer)

- ○ No
- ○ Unsure
- ○ Yes
- ○ Yes, if the following conditions were met (check all that apply)
  - ☐ If the young person would not be in direct future competition with me
  - ☐ If it would not take up too much of my time
  - ☐ If I would not be asked or expected to share my trade "secrets"
  - ☐ If the young person were a potential future practice purchaser/associate etc.
  - ☐ Other

40.) Please rate how important the following systems are to your orthodontic practice.

	Very Unimportant	Unimportant	Neither Unimportant nor Important	Important	Very Important
a.) Written philosophy of practice	○	○	○	○	○
b.) Written practice objectives	○	○	○	○	○
c.) Written practice budget	○	○	○	○	○
d.) Office policy/procedure manual	○	○	○	○	○
e.) Written job descriptions	○	○	○	○	○
f.) Written staff hiring/training program	○	○	○	○	○
g.) Continuing education program	○	○	○	○	○
h.) Staff salary/benefits program	○	○	○	○	○
i.) Individual performance appraisals	○	○	○	○	○
j.) Measurement of practice productivity	○	○	○	○	○
k.) Practice promotion/marketing plan	○	○	○	○	○
l.) Recall system	○	○	○	○	○
m.) Accounts payable system	○	○	○	○	○
n.) Accounts receivable system	○	○	○	○	○

o.)	Delinquent accounts system	○	○	○	○	○
p.)	Patient education system	○	○	○	○	○
q.)	Referral tracking system	○	○	○	○	○

Do you think these basic principles are better introduced in graduate school or learned and developed on the job?

		At School	On The Job
a.)	Written philosophy of practice	○	○
b.)	Written practice objectives	○	○
c.)	Written practice budget	○	○
d.)	Office policy/procedure manual	○	○
e.)	Written job descriptions	○	○
f.)	Written staff hiring/training program	○	○
g.)	Continuing education program	○	○
h.)	Staff salary/benefits program	○	○
i.)	Individual performance appraisals	○	○
j.)	Measurement of practice productivity	○	○
k.)	Practice promotion/marketing plan	○	○
l.)	Recall system	○	○
m.)	Accounts payable system	○	○
n.)	Accounts receivable system	○	○
o.)	Delinquent accounts system	○	○
p.)	Patient education system	○	○
q.)	Referral tracking system	○	○

OPEN-ENDED QUESTIONS

1.) If you were to design a practice management curriculum to be incorporated into Canadian graduate orthodontic training programs, what topics or experiences would you be sure to include?

2.) What topics or experiences would be more appropriately learned on the job or once formal education is completed?

3.) If you were applying for your post-graduate orthodontic training again, and you had a choice between a typical Master's of Science -type program in which you would complete a research project and obtain an MSc degree upon completion, and a Master's of Business Administration -type program in which there would be no research project requirement and instead you would receive a combination orthodontic and MBA degree, which program would be preferable to you and why?

Please be sure of your responses before you press submit, for you will be unable to return to this page to modify your responses.

Submit

Appendix D: Letter of Initial Contact

UNIVERSITY OF ALBERTA

Dentistry and Dental Hygiene
Excellence in Dental Health

How can Canadian orthodontic residency programs better prepare their newly graduated orthodontists for the business challenges of orthodontic practice?

Supervisor – Dr Paul Major
Email – xxxx@ualberta.ca
Phone – 780-XXX-XXXX

Masters Student – Dr Marguerite Ntiamoa Duncan
Email – orthosurvey@dentistry.ualberta.ca
Phone – 780-XXX-XXXX

Letter of Initial Contact

Dear Canadian Orthodontist,

Thank you for taking a few moments to read this letter introducing myself and my upcoming research from the Department of Dentistry, University of Alberta. My name is Marguerite Ntiamoa Duncan. I am a Masters of Science (Orthodontics) candidate at the University of Alberta. I am conducting questionnaire-based research for which **I am requesting your assistance and participation**.

The **purpose** of this portion of my research is to gather information from practicing Canadian orthodontists that will help identify the most critical areas of business savvy required to be successful in the business of orthodontics. I will strive to understand how you initially acquired this knowledge and skill-set and how past educational experiences have affected your orthodontic practice success from a practice management perspective.

There is a general opinion in the literature that a structured business curriculum should be developed and implemented by graduate orthodontic training programs. It has been suggested that orthodontists need to learn to be good business citizens and that the profession has a responsibility to ensure that we limit the potential negative effects that commercialization and other pressures may have on business practice and the delivery of patient care. I feel that one of the best ways to accomplish such goals is through education.

The **final outcome** of my investigation will be to make a formal recommendation for the minimum business curriculum requirements that Canadian graduate orthodontic training programs should strive to incorporate in order to meet the immediate needs of new orthodontists and to properly prepare them for critical lifelong business management learning.

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Faculty of Medicine and Dentistry

Dentistry/Pharmacy Centre • University of Alberta • Edmonton • Canada • T6G 2N8

Please understand the following:

1) Your participation is voluntary and expected to take approximately 25 minutes of your time.
2) Your responses are confidential and the questionnaires do not have names or other identifiers on them.
3) No individual or regional information will be reported. All responses will be aggregated for analysis
4) The questionnaire will be available in online format. If you would prefer a hard copy format, contact me via any of the means below and I will mail you a copy.
5) **Your opinions and input will be extremely valuable and your participation is greatly appreciated.**

The questionnaire is now available online. It can be most easily accessed at http://TinyURL.com/UofAOrtho . There will be no access code, login requirements or personal identification required at the time of your response. No identifiers, including your location or IP address will be collected.

If you do not wish to participate in this research and prefer to be removed from my contact list, please respond with your name and mailing address by email, mail or phone. If I do not hear from you in this regard, you will receive a letter from me in the near future reminding you to complete the questionnaire. If you have already completed the questionnaire upon receipt of the reminder letter, please disregard it.

Should you decide to participate, please access the questionnaire online at http://TinyURL.com/UofAOrtho and complete and submit it within one week to ensure timely gathering of information.

If you would like to receive a report of the aggregated results of this questionnaire please send me an email with your name and mailing address. A prompt at the end of the survey will give you another opportunity to request this information.

If you require more information regarding your rights as a research participant please contact the University of Alberta Health Research Ethics Board at 780-492-0302.

Thank you for your time and interest.

Sincerely,

Marguerite Ntiamoa Duncan
BSc, DDS, MSc Candidate (University of Alberta)
Mail: 4051 Dentistry/Pharmacy Centre, Edmonton, AB T6G 2N8
Email: orthosurvey@dentistry.ualberta.ca

REMINDER:

UNIVERSITY OF ALBERTA

Orthodontic Business Questionnaire

http://TinyURL.com/UofAOrtho
or if problems with the link above you may use
http://www.psych.ualberta.ca/~ITL/Ortho_Survey/

You can contact me by the following means should you have any questions or concerns or if you would like to request a summary of the results be sent to you:

Dr. Marguerite Ntiamoa Duncan
Mail: 4051 Dentistry/Pharmacy Centre, Edmonton, AB T6G 2N8
Email: orthosurvey@dentistry.ualberta.ca

REMINDER:

UNIVERSITY OF ALBERTA

Orthodontic Business Questionnaire

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You can contact me by the following means should you have any questions or concerns or if you would like to request a summary of the results be sent to you:

Dr. Marguerite Ntiamoa Duncan
Mail: 4051 Dentistry/Pharmacy Centre, Edmonton, AB T6G 2N8
Email: orthosurvey@dentistry.ualberta.ca

Appendix E: Questionnaire Reminder Letter

UNIVERSITY OF ALBERTA

Dentistry and Dental Hygiene
Excellence in Dental Health

How can Canadian orthodontic residency programs better prepare their newly graduated orthodontists for the business challenges of orthodontic practice?

Masters Student – Dr Marguerite Ntiamoa Duncan
Email – orthosurvey@dentistry.ualberta.ca
Phone – 780-XXX-XXXX

Supervisor – Dr Paul Major
Email – xxxx@ualberta.ca
Phone – 780-XXX-XXXX

Final Online Questionnaire Reminder

Dear Dr ,

You may recall receiving correspondence from me introducing myself and my practice management questionnaire-based research. This short note is a reminder to please visit the website and complete the questionnaire if you have not already done so. If you have already completed the questionnaire, thank you for your participation and please disregard this note.

Some doctors have had difficulty accessing the online questionnaire by typing the URL into their web browser: **TinyURL.com/UofAOrtho**

If you would prefer, you can send an email to me at **orthosurvey@dentistry.ualberta.ca** and I will reply with a clickable link for easy access to the questionnaire. Additionally, I can send a paper copy of the questionnaire to you if you prefer.

The response rate so far from Canadian orthodontists has been less than optimal, however the results thus far are interesting and opinion is at times heated. There is an option at the end of the questionnaire to submit a separate form with your name and address to request a copy of the results when they become available.

The questionnaire will continue to be available online until March 22, 2010.

I will take a moment to remind you of the intention of this investigation:

> The **purpose** of this portion of my research is to gather information from practicing Canadian orthodontists that will help identify the most critical areas of business savvy required to be successful in the business of orthodontics. I will strive to understand how you initially acquired this knowledge and skill-set and how past educational

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experiences have affected your orthodontic practice success from a practice management perspective.

The **final outcome** of my investigation will be to make a formal recommendation for the minimal business curriculum requirements that Canadian graduate orthodontic training programs should strive to incorporate in order to meet the immediate needs of new orthodontists and to properly prepare them for critical lifelong business management learning.

The questionnaire can be accessed online at **http://TinyURL.com/UofAOrtho** . There will be no access code, login or other personal identification required at the time of your response.

Should you decide to participate, please access the questionnaire online at **http://TinyURL.com/UofAOrtho** , and complete and submit it within 5 days to ensure timely gathering of information.

You can contact me by the following means should you have any questions or concerns:

Mail: 4051 Dentistry/Pharmacy Centre, Edmonton, AB T6G 2N8
Email: orthosurvey@dentistry.ualberta.ca

If you require more information regarding your rights as a research participant please contact the University of Alberta Health Research Ethics Board at 780-492-0302.

Sincerely,

Marguerite Ntiamoa Duncan
BSc, DDS, MSc Candidate (University of Alberta)

Thank you for your participation! Your input is extremely valuable and greatly appreciated!

Appendix F: Complete descriptive data of survey respondents

Characteristic	*n*	
Gender	Total = 136	
Male	107	78.7%
Female	29	21.3%
Graduation Year	Total = 136	
1969 and earlier	2	1.5%
1970-79	17	12.5%
1980-89	38	27.9%
1990-99	41	30.1%
2000 and later	38	27.9%
Graduation Country	Total = 135	
Canada	93	68.9%
United States	40	29.6%
Other	2	1.5%
How Soon Began to Practice After Graduation	Total = 136	
Within 6 months	123	90.4%
In 7-12 months	8	5.9%
In 13-24 months	3	2.2%
In 25+ months	2	1.5%
Reason For any Delay in Starting to Practice	Total = 17	
Moved to a new location	5	29.4%
Family or personal reasons	4	23.5%
Did not start planning early enough	3	17.6%
Licensing issues	1	5.9%
Other	4	23.5%
Province of Primary Practice	Total = 136	
British Columbia	23	16.9%
Alberta	31	22.8%
Saskatchewan/Manitoba	12	8.8%
Ontario	41	30.1%
Quebec	20	14.7%
Atlantic Provinces	9	6.6%
Competitiveness of Your Primary Practice Environment	Total = 135	
Highly Competitive	54	40.0%
Moderately Competitive	57	42.2%
Slightly Competitive	16	11.9%
Not Competitive	8	5.9%

APPENDIX F: Complete descriptive data continued

Characteristic	*n*	
Practice		
Solo Practice	77	56.6%
Associateship – Associate	9	6.6%
Associateship – Owner	7	5.1%
Partnership	17	12.5%
Cost-sharing Group Practice	22	16.2%
Academic	2	1.5%
Other		
Number of Orthodontists In Respondent's Primary Practice	Total = 136	
One	76	55.9%
Two	41	30.1%
Three	16	11.8%
Four	2	1.5%
Five or more	1	0.7%
Average Hours Worked per Week	Total = 131	Mean – 31.7 hours SD – 6.6 hours
Average Weeks Worked per Year	Total = 131	Mean – 44.6 weeks SD – 3.9 weeks
Approximate Individual Gross Yearly Income	Total = 136	
$199,999 or less	15	11.0%
$200,000 - $399,999	13	9.6%
$400,000 - $599,999	6	4.4%
$600,000 - $799,999	12	8.8%
$800,000 - $999,999	11	8.1%
$1,000,000 - $1,199,999	14	10.3%
$1,200,000 - $1,399,999	18	13.2%
$1,400,000 - $1,599,999	10	7.4%
$1,600,000 - $1,799,999	7	5.1%
$1,800,000 - $1,999,999	7	5.1%
$2,000,000 - $2,199,999	1	0.7%
$2,200,000 - $2,399,999	2	1.5%
$2,400,000 - $2,599,999	3	2.2%

APPENDIX F: Complete descriptive data continued

Characteristic	*n*	
$2,600,000 - $2,799,999	1	0.7%
$2,800,000 - $2,999,999	3	2.2%
$3,000,000 +	5	3.7%
Undisclosed	8	5.9%
Full Treatment Starts per Year	Total = 115	Mean – 239.5
		SD – 185.8
		Median - 200
		High – 1300
		Low – 10
Full Treatment Starts per Year – Outliers removed	Total = 104	Mean – 218.6
		SD – 117.9
		Median – 200
		High – 550
		Low – 50
Number of Practices Owned	Total = 112	Mean – 1.3
		SD – 0.55
		Median – 1
		High – 4
		Low – 1
One	82	73.2%
Two	27	24.1%
Three	2	1.8%
Four	1	0.9%
Years From Graduation to Practice Ownership	Total = 114	Mean – 1.5
(zero represents ownership within the		SD – 2.3
first year after graduation)		High – 10
		Low - 0