Resident Evaluation of Orthodontic Programs in Canada


Abstract: The purpose of this study was to investigate the satisfaction of Canadian orthodontic residents with their programs and determine the scope of their training. An anonymous online questionnaire was sent to all Canadian orthodontic residents in November 2006. Data were assembled and categorized by different variables, and chi-square comparative analyses were performed. Forty-four out of fifty-four residents responded, giving a participation rate of 81.48 percent. Overall, 86.36 percent of responding residents were satisfied with their program. Respondents said they felt they received the appropriate amount of formal didactic teaching sessions and dedicated and protected academic time. All residents indicated their programs offered training in numerous treatment philosophies: 93.18 percent said they have sufficient clinically based training, and 72.73 percent indicated that their research-based training was sufficient. All responding residents indicated they will complete more than thirty patients from start to finish, and 25 percent estimated completion of more than seventy patients by graduation. Residents said they will complete on average five orthognathic surgery, twenty-four extraction, thirty non-extraction, eight adult, and thirteen patients in the mixed dentition. Only 50 percent said their programs contained care for disabled or underserved patients. Most (86.36 percent) said they feel they will be adequately prepared to provide unsupervised orthodontic care after graduation. These orthodontic residents indicated they collaborate most with the disciplines of oral surgery, periodontics, and prosthodontics. However, only 52.27 percent indicated they have a formal interdisciplinary program for treating patients. We conclude from the study that Canadian orthodontic residents are satisfied with the didactic, clinical, and research aspects of their programs. They receive comprehensive instruction with the opportunity to complete a significant number of patients, employing a variety of treatment approaches.

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Orthodontics is one of the most popular specialties in dentistry. Currently, there are five graduate orthodontic programs in Canada associated with faculties of dentistry at the Universities of Alberta, Manitoba, Montreal, Toronto, and Western Ontario. Each program accepts three or four residents annually, and the programs range in length from thirty-five to thirty-six months. All programs have a compulsory research component, and residents graduate with a master of science degree and qualify to write the Royal College of Dentists of Canada (RCDC) board examination. Successful completion of the RCDC examination allows candidates to register for a specialty license across Canada. Residents in all Canadian programs are also eligible to take the American Board of Orthodontics (ABO) examination and become board-certified. The chairs of the five programs meet at least twice each year to discuss developments within each program, curriculum, selection of new residents, and future directions of orthodontics in Canada.

No previous study in Canada has evaluated orthodontic graduate programs from the residents’ perspective. There has been a succession of graduate orthodontic education surveys administered to program chairs in the United States and Canada. These investigations were sponsored by the American Association of Orthodontists (AAO) Council on Education for the purpose of determining the status of graduate orthodontic education, identifying strengths and weaknesses within programs, collecting information on the clinical and didactic curricula, establishing a basis to compare programs through time, and identifying educational trends; the studies were conducted in 1983, 1989, 1994, and 1999. These surveys were comprehensive and covered a
variety of areas of graduate orthodontic education including program organization, graduate students, faculty, facilities, clinical details, treatment techniques, research, and curriculum.

This series of studies found that the number of patients of an average graduate orthodontic resident steadily increased, from fifty-eight in 1983 to eighty-five in 1999. The number of patient starts of orthodontic residents also increased steadily, from twenty-five in 1983 to forty-three in 1999. These recent surveys found that residents treated more patients in the mixed dentition, partial treatment patients, and craniofacial patients than previously. The number of functional appliance patients and patients requiring orthognathic surgery remained approximately the same throughout the years. It was also found that most graduate programs use various fixed appliance systems, with the most popular being a pretipped/pretorqued 0.022 appliance system. Most programs use a variety of different band/bracket manufacturers, with very few restricted to only one. Interdisciplinary care is now more prominent in orthodontic programs with an increase in courses on surgical orthodontics and temporomandibular dysfunction and their management.

The aim of our study was to explore residents’ perceptions of their didactic and clinical treatment experiences including the number of clinical patients undertaken, patient completion rates, techniques utilized, and the research component of Canadian graduate orthodontic programs. The study also investigated the overall satisfaction of orthodontic residents with their programs and their sense of preparedness to provide orthodontic treatment upon graduation.

Methods

The study received approval from the University of Manitoba Health Research Ethics Board. Program chairs from each of the Canadian orthodontic programs were contacted for consent for their residents to participate in a survey containing forty-one multiple-choice questions and one-line answers.

We developed the survey instrument for this study based on suggestions from educators in orthodontic residency programs in Canada and our own experiences with the implementation of postgraduate education. Several orthodontic residents completed the survey in a pilot-test to determine completion time and identify components of the survey that needed revision or clarification. Faculty members in orthodontic residency programs also reviewed the survey and provided feedback and suggestions about content and format. The survey was not formally assessed for validity and reliability. This article reports responses from residents in the following areas: 1) demographics (age, gender, year of program); 2) degree of overall satisfaction with their program and readiness to enter the dental workforce after program completion; 3) assessment of the content, time allocations, and format of their program; 4) estimations of the overall number of orthodontic patients they would complete during residency training; 5) types of orthodontic treatment they would complete during their residency training, including opportunities to provide care for disabled or underserved patient populations; 6) perceptions of how other dental specialties perceive orthodontics; and 7) degree of collaboration with other dental specialties during patient care.

In November 2006, all fifty-four Canadian orthodontic residents were sent an email with an online link to complete the survey. Each resident had his or her own personalized link to prevent residents from completing the survey more than once. It was stressed to the residents in the email and questionnaire that the survey was completely anonymous, that responses could not be traced to either the resident or the program, that no personal information was collected, and that results would be reported only as group data. Reminders were sent to residents who had not completed the survey. The questionnaire was divided into several segments including demographics, reasons for choosing orthodontics, evaluation of the program, and future directions. The results were collected into a Microsoft Excel spreadsheet and then categorized within different variables. Basic statistics and comparative analyses using chi-square testing were subsequently undertaken between gender and age groups.

Results

A total of forty-seven orthodontic residents started the questionnaire. A response rate of 81 percent was obtained, with forty-four of the fifty-four orthodontic residents responding to all questions. A total of thirty males (64 percent) and seventeen females (36 percent) participated. Most residents (98 percent) were in the age category of twenty-five to thirty-four years. Chi-square analysis resulted in
no statistically significant differences between the age categories (<25 years, 25–30 years, 30–34 years, 35–39 years, and >40 years), gender, and the different years of the program (p>0.05).

Seventeen residents (35 percent) were in the first year of their program, eighteen (38 percent) in their second year, and twelve (26 percent) in their third year. In addition to their dental degree (D.M.D. or D.D.S.), 85 percent of the residents had additional credentials: thirty orthodontic residents (64 percent) had a bachelor’s degree, seven had a master’s degree (15 percent), two (4 percent) had a diploma, and one had a doctorate/Ph.D./D.Sc. (2 percent). Seven (15 percent) did not have an additional degree.

Twenty-seven residents (60 percent) were of the opinion that they had just the right amount of exposure to orthodontics in dental school, while sixteen (36 percent) felt they had too little exposure to orthodontics. The majority of residents (86.36 percent) indicated that they were either “very satisfied” or “satisfied” with their program (Figure 1). Six residents (13.6 percent) were “dissatisfied,” and four of those residents (9 percent) were “very dissatisfied.”

All forty-four respondents indicated that their programs offer exposure and training to numerous orthodontic treatment philosophies. Most residents (66 percent) indicated that they had just the right amount of formal didactic teaching sessions or dedicated and protected academic time. Yet 32 percent (fourteen) said that although these academic components were included in their program, not enough time was allocated. Forty-one residents (93 percent) said they had experienced just the right amount of clinically based training in their orthodontic program, while 7 percent (three) said it was too much. Furthermore, thirty-two residents (73 percent) indicated that the amount of research-based training in their program was appropriate, while 9 percent (four) said it was too much and 11 percent (five) said there was too little emphasis on research.

All residents indicated they would start and complete at least thirty patients by the end of their training program. Eleven (25 percent) indicated that they expected to start and complete more than seventy patients (Figure 2). Residents were also asked how many orthognathic surgery patients, extraction patients, non-extraction patients, and adults they estimated they would treat from start to finish by the end of their orthodontic program. These results are presented in Table 1. Residents estimated that they would treat an average of 12.82 patients in the mixed dentition (range 5 to 40). The questionnaire also asked about treatment of underserved populations. Only 50 percent (twenty-two) said their program included care for disabled or underserved patients. Seventy-three percent of residents indicated that they felt there was a fair balance between the education and service aspects of their program.

Most residents (86.36 percent) indicated that they would be adequately prepared to enter the workforce after graduation, while 14 percent were unsure.
Residents were asked about the perception of other dental specialties towards orthodontics. A total of 41 percent said that other dental disciplines have a strongly positive view towards orthodontics; 34 percent said other disciplines have a somewhat positive view, 18 percent were neutral, and 7 percent indicated that other dental specialties have a somewhat negative view of orthodontics.

Only 52.27 percent of the responding residents indicated that their program contained a formal interdisciplinary program for treating patients. Residents were asked to identify the dental specialties they have collaborated with most in their training and were instructed to select all disciplines that applied. Residents indicated that most of their collaboration was with oral surgery, periodontics, and prosthodontics (Figure 3).

Discussion

There are no previously published surveys that evaluate the scope of the clinical and research curricula of Canadian orthodontic residency programs from the residents’ perspectives. In addition, there are no published studies that assess the overall satisfaction of orthodontic residents with their program. The current study is unique in that it provided orthodontic residents with the opportunity to reflect on the scope of clinical and research components and their satisfaction with their residency programs.

The AAO-sponsored studies demonstrated that the research aspect of orthodontic programs has steadily decreased while the clinical component has increased. The amount of time in the curriculum dedicated to research has declined as has the number of residents publishing papers. The research component has been diminished to reflect the increase in time dedicated to treating patients. The authors of that study assert that this may be due to residents wanting to graduate with more clinical experience and also because residency programs are increasingly expected to generate more revenue to support the orthodontic graduate program and university. Moreover, other international leaders in education

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<th>Treatment Procedure</th>
<th>Average</th>
<th>Range</th>
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<tr>
<td>Orthognathic Surgery</td>
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<td>1 to 10</td>
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<tr>
<td>Extraction</td>
<td>23.91</td>
<td>8 to 55</td>
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<td>Non-Extraction</td>
<td>30.57</td>
<td>15 to 70</td>
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<tr>
<td>Adults</td>
<td>8.27</td>
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Figure 2. Number of patients that residents expect to complete from start to finish by the end of their orthodontic training
assert that there is a greater emphasis being placed on clinical training, and the result is a reduced amount of time for research.6

Our study is part of a comprehensive questionnaire given to Canadian orthodontic residents. The responses reflect residents’ responses to questions asked about curriculum and overall satisfaction with their graduate orthodontic program.

The survey response rate of 81.48 percent (forty-four out of fifty-four) is good enough to allow generalizations about the entire group. Through email correspondence and the questionnaire itself, residents were clearly informed that this was an anonymous survey, responses could and would not be individually identified, and responses would be reported as group data only. To ensure this anonymity, responses were not grouped by program but were collected, analyzed, and interpreted as a whole. Therefore, conclusions drawn may be generalized across all five Canadian graduate orthodontic programs. The assurance of anonymity provides comfort that the responses accurately reflect the residents’ perspectives.

Overall, the majority of orthodontic residents in Canada seem to be satisfied with their programs. This finding suggests that orthodontic graduate programs in Canada are meeting the subjective needs of their residents. However, it is noteworthy that six residents indicated that they were either somewhat dissatisfied or very dissatisfied with their programs. Since identifying the residents or program would violate the ethics of the study, individual programs might consider regular feedback sessions, year-end reviews, and exit surveys. If dissatisfaction exists within a program, information that is discovered would assist in its resolution, with the goal of improving the program. Follow-up of this nature may be helpful to Canadian orthodontic program directors as they build upon the strengths and address the perceived weaknesses of their programs.

Our study also provides valuable information about how residents feel about the curricula of the various programs. All residents indicated that their program successfully offered training in a number of treatment philosophies. Most residents (66 percent) felt that their programs offered sufficient time for formal didactic sessions as well as protected time for research. Yet, a significant number of residents (fourteen, 32 percent) felt that there was not enough time for formal educational activities. This may be a product of the increased reliance on part-time instruc-
tors in graduate programs and the decreased number of full-time instructors.

A possible way to increase the amount of time for didactic teaching sessions is to decrease the number of patients that residents are treating. This, however, may not be favored by residents who are content with the amount of clinic-based training they receive. Increasing time dedicated to didactics may also not be popular with program directors as their overall revenue will decrease. Another solution is to extend the program length or find additional time within the program for formal education sessions; these may include evenings and weekends. Alternatively, residents may need to undertake an increased amount of self-directed study.

Graduate orthodontic residents perceive that Canadian programs offer an adequate amount of clinically based training. There was not a single resident who indicated he or she had received inadequate clinical training, although three said there was too much. Canadian orthodontic residents also indicated that they feel adequately prepared to provide orthodontic treatment upon graduation. It should be recognized that these are individual subjective assessments of their clinical ability and that residents may not be aware of what they do not know. The limitation of asking residents to self-assess their capacity for independent practice is that they lack the clinical experience necessary to make an informed judgment even though they expressed confidence in their clinical readiness.

Programs also seem to satisfy residents’ desire for research in the curriculum. Most residents (73 percent) indicated that they receive the right amount of research-based training, although 11 percent indicated that the research training they receive was too little. Therefore, residents were supportive of the requirement to complete a master of science degree that is a mandatory component of all programs in Canada.

All residents indicated that they expected to complete a minimum of thirty patients from start to finish during their training, while some residents reported they would start and finish more than seventy patients. This may be further evidence that there is a sufficient amount of “clinical time” in Canadian orthodontic programs. The ability to start and finish this number of patients is likely due to the three-year length of these programs, more efficient use of time, or more efficient treatment mechanics.

The AAO survey of programs in the United States and Canada indicated that in 1999 residents started, on average, forty-three patients. However, this study did not report how many of these patients the program directors expected their residents to finish. Residents in twenty-four- to thirty-month programs, however, would likely not have the ability to finish as many patients, and therefore likely not have the opportunity to treat a variety of different patients due to program length restrictions. This limited clinical exposure may limit residents’ clinical knowledge, ability, and expertise at the time of graduation. Newly qualified orthodontists from shorter programs may thus be at a clinical disadvantage, particularly if they enter solo practice, until they have gained more insight and experience in starting new patients and following them through into retention.

Canadian orthodontic residents indicated that they would start and finish an average of 4.89 orthognathic surgery patients, with a range of one to ten. The average number of orthognathic surgery patients that program directors indicated residents would start according to the AAO study in 1999 was 5.9. However, a direct comparison between Canadian and U.S. graduate orthodontic programs is difficult since Canadian residents were asked how many patients they not only started, but finished as well. The average time required to start and finish an orthognathic surgery patient usually does not extend beyond three years. Therefore, it may be inferred that on average Canadian residents start fewer orthognathic surgery patients than their U.S. counterparts. This response is interesting since it would be expected that Canadian orthodontic residents would treatment plan and start more orthognathic surgery patients since surgical costs of orthognathic procedures done in the hospital tend to be covered by provincial health care services. There was also one resident who indicated that he or she would start and finish only one orthognathic surgery patient, likely not enough to provide the resident with sufficient exposure to this mode of treatment.

Canadian orthodontic residents appear to be obtaining adequate experience in treating adults. They indicated that they started and finished an average of 8.27 adult patients. This result compares favorably with the adult non-surgery patients (average 5.9) started by residents reported by program directors in the 1999 AAO survey. Similar to orthognathic surgery patients, there was one resident who indicated that he or she would start and finish only a single adult patient, which can be considered insufficient exposure for this resident. It may be prudent for all program directors to undertake an audit of the patients treated by each resident to balance the exposure
of residents to all treatment modalities, if they are not already doing so. This patient audit combined with regular discussions with residents can identify areas that may need to be bolstered in an effort to ensure all residents gain experience diagnosing, treatment planning, and then treating patients with an assortment of clinical problems. This strategy will result in residents’ graduating with more confidence and enhanced diagnostic and clinical abilities.

Canadian residents have an adequate distribution of extraction and non-extraction patients and a considerable number of patients in the mixed dentition. Based on the 1999 AAO survey, Canadian residents start and finish more than three times the average amount of mixed dentition patients started as their U.S. counterparts.5

Disappointingly, only half of the orthodontic residents said that their program provided care for disabled or underserved patients. In most instances, patients of lower socioeconomic status are unable to access oral health care because they cannot afford the fees of private practice dentists and orthodontists in Canada. Some seek oral health care at reduced costs for treatment provided by the students at the faculties of dentistry where students provide care under instructor supervision. However, orthodontic graduate programs may not be fulfilling this important social service. The majority of residents did indicate that they felt there was a fair balance between the education and service aspects of their programs.

Another disappointing finding was that only 52 percent of orthodontic residents indicated that their program contained a formal program for interdisciplinary treatment of patients. The AAO survey in 1999 revealed that two-thirds of programs offer interdisciplinary courses.4 Communication and collaboration with a team including general dental specialists and medical colleagues are fundamental to treating adult patients, patients with temporomandibular dysfunctions, orthognathic surgery patients, and medically compromised patients. Residents indicated that they collaborate most frequently with oral surgeons, followed by periodontists and prosthodontists. Collaborations with these specialty areas can be used as a guide for program directors to institute formalized interdisciplinary learning programs. These programs can be implemented even in the absence of other graduate specialty programs by organizing seminars and treatment planning sessions with instructors and specialists in these areas.

Conclusions

Overall, orthodontic residents in Canada reported satisfaction with their programs. They receive comprehensive training with the opportunity to start and complete a significant number of their patients using different treatment approaches and philosophies. These residents indicated that they had experienced sufficient clinical training in their orthodontic programs. The survey findings suggest that orthodontic programs in Canada are deficient in providing care to underserved populations and disabled patients. The findings also indicate that programs could improve in increasing the opportunity for orthodontic residents to participate in the treatment of patients requiring interdisciplinary treatment. Enhanced collaboration and communication with other dental and medical specialties in the diagnosis, treatment planning, and treatment of patients requiring interdisciplinary treatment would enhance graduate orthodontic experiences.

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REFERENCES


