Perspectives of Canadian Final-Year Physiotherapy Students on Cardiorespiratory Physiotherapy as a Career Choice

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ABSTRACT

Purpose: To investigate the opinions of final-year Canadian physiotherapy students of cardiorespiratory physiotherapy (CRP) and the factors influencing their decision about whether to pursue a career in CRP. **Methods:** A cross-sectional online survey was completed by final-year Master of Science of Physical Therapy students from three of the largest English-speaking physiotherapy schools in Canada. **Results:** A total of 120 students responded to the survey (overall response rate was 44%). Fifteen students (12.5%) responded that they were extremely or quite interested in specializing in CRP. The most common factors that positively influenced students' decision to consider specializing in CRP were job accessibility, potential salary, and experiences in the area, and the most common factors that negatively influenced their decision were the clinical aspects of the area, their experiences in the area, job accessibility, and the influence of others. The most common factors that positively influenced students' opinion of CRP were their clinical supervisor, educator, or lecturer; their own clinical experience; and evidence in the literature, and the most common factors that negatively influenced their opinion were their own clinical experience and their peers. **Conclusion:** Strategies focusing on increasing awareness of the role of physiotherapists in the care of patients with cardiorespiratory conditions, exposing students to the positive impact that physiotherapists have in this practice area, and good mentorship experiences may promote the attractiveness of this specialty.

Key Words: cardiorespiratory physiotherapy; career choice; students; survey.

RÉSUMÉ

Objectif : enquêter sur les opinions des étudiants canadiens de dernière année en physiothérapie sur la physiothérapie cardiorespiratoire (PCR) et les facteurs influant leur décision de poursuivre une carrière en PCR. **Méthodes :** une enquête transversale a été réalisée via un sondage en ligne auprès d'étudiants en dernière année de la maîtrise en physiothérapie dans trois des plus grandes écoles de physiothérapie anglophones au Canada. **Résultats :** un total de 120 étudiants ont répondu au sondage (taux de participation: 44 %). Quinze étudiants (12,5 %) ont répondu être extrêmement ou plutôt intéressés à se spécialiser en PCR. Les principaux facteurs d'influence positive sur la décision de se diriger vers une spécialisation en PCR sont l'accès à l'emploi, le salaire potentiel et les expériences dans le domaine, tandis que les principaux facteurs d'influence négative sont les aspects cliniques, leurs expériences dans le domaine, l'accès à l'emploi et l'influence d'autrui. Les principaux facteurs d'influence positive sur leur opinion de la PCR sont leur superviseur clinique, leur formateur ou leur professeur, leur propre expérience clinique et les preuves dans la littérature, tandis que les principaux facteurs d'influence négative sont leur expérience clinique et leurs pairs. **Conclusion :** des stratégies visant à sensibiliser les étudiants au rôle des physiothérapeutes dans la prestation des soins aux patients souffrant de problèmes cardiorespiratoires et à exposer les étudiants à la contribution des physiothérapeutes dans ce champ de pratique, ainsi que de bonnes expériences de mentorat pourraient promouvoir l'attrait de cette spécialité.

Despite the different areas of practice within physiotherapy, research has shown that physiotherapy students are more likely to pursue employment or specialize in sports- and musculoskeletal-related practice.^{1–4} Although cardiorespiratory physiotherapy (CRP) is considered interesting and valued, few physiotherapy students intend

to pursue employment and specialization in this area.^{1,4,5} This lack of interest and desire to seek employment in the area of CRP may be the result of a lack of exposure to patients with cardiorespiratory problems, lack of a role model, limited potential for postgraduate studies

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and research, limited job accessibility,⁴ and a perception that CRP requires a lower level of competency.⁵

The low number of students seeking employment in the area of CRP is a cause for concern because cardiovascular and pulmonary diseases are considered to be leading causes of morbidity and mortality around the world,⁶ and their prevention and treatment, including rehabilitation and lifestyle changes, require attention. If this lack of interest in CRP as a career path continues, it could have a negative impact on recruitment to the CRP area and the subsequent options for treatment of people with cardiac and respiratory diseases.

Although some studies have examined physiotherapy students' perceptions of CRP⁵ and factors influencing career choice in experienced physiotherapists,⁷ only one study, from Australia and New Zealand, has investigated the specific factors influencing students' decision to specialize (or not) in CRP.⁴ The authors reported that although most of the students had undertaken cardiorespiratory placements, only 3% had expressed being extremely interested in specializing in CRP. Experiences during clinical placements as well as academic and clinical supervision were the main elements that had the potential to both positively and negatively influence students' opinions of CRP.⁴ Because the structure of physiotherapy schools and health care environments in Canada may differ from those in Australia and New Zealand, we sought to explore the factors in a Canadian context using similar methodology but with a slightly modified questionnaire. Thus, the objectives of this study were to (1) investigate the opinions of final-year Canadian physiotherapy students of CRP in relation to other areas within physiotherapy practice and (2) investigate the factors influencing students' decision about whether to choose to pursue a career in CRP. The findings of this survey will inform Canadian academics and clinicians in physiotherapy about the factors that affect students' opinions and perceptions of CRP, and they may encourage them to implement appropriate measures to increase the number of new graduates who select CRP practice in Canada.

METHODS

Study design

This was a cross-sectional study that used an online survey completed by Master of Science of Physical Therapy (MScPT) students from three of the largest English-speaking physiotherapy schools in Canada, with representation from both west and east: the University of British Columbia, University of Alberta, and University of Toronto.

Participants and inclusion criteria

We invited MScPT students enrolled in the physiotherapy program of the Universities of British Columbia,

Alberta, and Toronto to participate in the study. Students were considered eligible if they were in the last 3 months of their program.

Recruitment process

We used the modified Dillman approach⁸ for the recruitment process. Once ethics approval by the Research Ethics Board at each university had been received, the administrative officers of each physiotherapy program sent a hyperlink using LimeSurvey (Hamburg, Germany) to their graduating class, and, if students wished to participate, the link directed them to the online survey. The first page of the survey consisted of a paragraph describing the study, the study's importance, and the risks and benefits of participating. It also emphasized that participation was completely voluntary and provided a cutoff date. We assumed that any students who completed and submitted the survey had consented to participate in the study.

One week after the initial email inviting students to participate in the study, we sent a follow-up email to the students, either thanking them for completing the survey or reminding them to complete it. Two weeks later, the students were sent a final email, thanking them for completing the survey and providing a final link to the survey if they had not already completed it. The surveys were completed between June and August 2014.

Data collection

Questionnaire

We slightly modified a previous questionnaire developed by Reeve and colleagues⁴ for the Australian and New Zealand physiotherapy student population. The modifications pertained to formatting and grammar and were necessary to administer the survey online (see Appendix 1 online). The Canadian questionnaire consisted of 38 questions, organized into the six sections originally laid out by Reeve and colleagues: (1) demographic information, (2) clinical placement experience, (3) future physiotherapy career intentions, (4) opinions of CRP, (5) factors influencing choices of specializing, and (6) general opinion of CRP and other general questions. It was divided into yes–no questions, multiple-choice questions, 5-point Likert scales, and open-ended comments, and it collected the following descriptive measures: age, sex, current university of physiotherapy study, previous (if any) university of physiotherapy study, currently held university degree(s), total number of clinical placements, and total number of cardiorespiratory placements.

Once ethics approval had been granted, we pilot tested the questionnaire on five recent graduates. We sent the online questionnaire to the pilot participants in an email containing a hyperlink. The pilot participants

Figure 1 Flowchart of the study.

Table 1 Characteristics of Participants and Cardiorespiratory Placements

Characteristic	No. (%) of participants*
Age, mean (SD), y	26 (3)
Gender	
Female	89 (74)
Male	31 (26)
Degree completed before physiotherapy degree	
BSc	48 (40)
Honours BSc	32 (27)
BA	6 (5)
Honours BA	5 (4)
Other†	34 (28)
No. of placements‡	
1	76
2	8
Timing of placements‡	
1st year	32 (38)
2nd year	46 (55)
Both 1st and 2nd year	6 (7)
Most common order of placements‡	
First	26 (31)
Second	21 (26)
Third	15 (18)
Most common settings§	
Intensive care unit	51 (61)
Medical	35 (42)
Surgical	19 (35)
Outpatient rehabilitation	6 (7)
Community	1 (1)
Other (urology, nephrology, transplant units)	9 (11)

Note: $n = 120$. The three participating universities offer six to seven placements of 5–6 wk each; any of these can be cardiorespiratory placements.

*Unless otherwise indicated.

† Master's degree or multiple degrees (BSc or BA + master's degree).

‡ $n = 84$.

§ ns total more than 121 because students could respond to more than one option.

had the opportunity to provide feedback at the end of the questionnaire and mark any questions that were not clear. Once the pilot testing was complete, we made minor modifications to the online formatting of the questionnaire on the basis of the feedback received. We

did not include the responses from the pilot participants in the analyses.

Sample size justification and data analysis

Our potential sample was the entire 2nd-year MScPT student population of three of the largest English-speaking physiotherapy schools in Canada ($n = 271$). Literature on educated individuals completing Web-based surveys has shown typical response rates of 34%–39%.⁹ We assumed that this population would also be motivated to participate because the topic of the questionnaire related directly to their profession. In addition, we used a modified Dillman approach⁸ for our recruitment, which is known to further increase response rates. Moreover, a similar study had achieved a response rate of 61%.⁴ Using this rationale, we anticipated a response rate of 50%–60% (125–150 students).

We exported all data from LimeSurvey to Excel. We reported the data as percentages or frequencies in the text or using tables and figures. We reported age as mean (SD). A research assistant summarized the open questions into themes, which were double checked by one of the investigators (TJF).

RESULTS

Response rate and participant characteristics

A total of 120 students responded to the online survey (overall response rate of 44%). Of these, 6 students terminated the survey after completing the first section (General Information). One student entered the survey but did not answer any questions and was therefore not included in the calculation for response rate or data analysis. In the Results section, when a percentage does not equal 100%, it is because responses to a question were missing. None of the students had studied physiotherapy anywhere other than their current university.

The questionnaire asked whether students intended to seek employment as a physiotherapist in Canada; 115 students (96%) reported that they did, 2 students (2%) reported that they did not, and 3 students (2%) were

Figure 2 Factors influencing students' opinion of cardiorespiratory physiotherapy.

Note: $n = 102$.

undecided. Students were asked whether they intended to pursue postgraduate physiotherapy studies in the 5 years after completing their physiotherapy program; 32 (27%) reported that they did, 31 (26%) reported that they did not, and 39 (33%) were unsure. General information about the participants and further details on the response rate for each university are presented in Table 1 and Figure 1, respectively.

Previous exposure to cardiorespiratory physiotherapy

The questionnaire asked whether students had at least one CRP placement at the time at which they completed the survey, and 70% ($n = 84$) reported that they had. Of those students who responded that they had not ($n = 30$; 25%), 83% ($n = 25$) reported that they had treated patients with cardiorespiratory conditions in other placements. The characteristics of the placements are presented in Table 1. The questionnaire asked the 84 students who had at least one CRP placement at the time of the survey about their experiences; 83% of them ($n = 70$) reported that their CRP placement had increased their cardiorespiratory knowledge, and 70% ($n = 59$) had found it enjoyable. Twenty-one students (18%) had requested their elective placement in CRP; their reasons were personal interest ($n = 4$; 19%), opportunity to learn more and apply practical skills ($n = 5$; 24%), and program requirement ($n = 12$; 57%).

Opinion of cardiorespiratory physiotherapy

Students were asked about factors that influenced their opinion of CRP. The most common factors that positively influenced their opinion were their cardiorespiratory clinical supervisor, educator, or lecturer; their own clinical experience; and evidence in the literature (see Figure 2). The most common factors that negatively

influenced their opinion were their own clinical experience and their peers (Figure 2).

Career intention

Only 38 of the students (32%) stated that they had been aware before beginning their physiotherapy program that physiotherapists had a role in the management of cardiorespiratory conditions. Thirty-one percent of the students ($n = 37$) responded that they knew which area within physiotherapy they wanted to work before commencing their physiotherapy program. Most of these students responded that, before beginning the MScPT, they had intended to work in musculoskeletal physiotherapy ($n = 18$, 49%); 10 students stated that they had intended to work in pediatrics (28%), 5 (14%) in neurology, 2 (5%) in sports, and 2 (5%) in both musculoskeletal physiotherapy and sports. None of the students reported that they had wanted to work in CRP before beginning their physiotherapy degree.

When students were asked whether they would consider specializing in any area of physiotherapy at some stage of their career, 106 students (88%) responded that they were planning or considering specializing in an area of physiotherapy. Figure 3 shows the responses regarding areas of interest for specialization after registration as a physiotherapist. The most popular areas of interest for specialization (students responded that they were "extremely or quite interested" on a 5-point Likert scale) were musculoskeletal ($n = 94$; 78%), followed by neurology ($n = 65$; 54%) and pediatrics ($n = 39$; 33%). Only 15 students (13%) responded that they were extremely or quite interested in specializing in CRP. When students were asked whether the area of practice in which they wished to work had changed during their physiotherapy training, 69 (58%) stated no, and 33 (28%)

Figure 3 Areas of interest for specialization.

Note: $n = 109$.

Figure 4 Factors influencing the decision of students who reported considering to specialize in cardiorespiratory physiotherapy.

Note: $n = 64$.

stated yes. Of those who said yes, 7 reported that they had changed their preferred area to CRP; they did not give specific reasons.

Perspectives of students who reported interest in specializing in cardiorespiratory physiotherapy

Students who responded that they were a little bit interested, neutral, quite interested, or extremely interested in specializing in CRP ($n = 67$; 56%) were asked about the factors that influenced their interest. The most common factors that positively influenced their decision to consider specializing in CRP were job accessibility, potential salary, and exposure or experiences in the area. Of those who responded that they had some interest in specializing in CRP, 64% ($n = 43$) stated that a role model or mentor in CRP had influenced them and that the most influential person had been their clinical

educator or supervising clinician ($n = 26$; 39%) or a lecturer or professor ($n = 16$; 24%). The most common factors that negatively influenced their decision to consider specializing in CRP included clinical aspects of the area, exposure or experiences in the area, job accessibility, and the influence of others (see Figure 4). Greater interest in another area of physiotherapy was the most common factor that deterred the students from working in CRP.

The most common (first or second choice) preferred work settings in CRP reported by the students included private practice ($n = 14$; 21%), paediatrics ($n = 13$; 19%), intensive care unit ($n = 11$; 16%), pulmonary rehabilitation ($n = 10$; 15%), and cardiac rehabilitation ($n = 12$; 18%). The least common preferred work settings in CRP were research ($n = 3$; 48%), teaching (clinical educator or lecturer; $n = 17$; 25%), and women's health ($n = 12$; 18%).

Figure 5 Factors influencing the decision of students who reported not to consider specializing in cardiorespiratory physiotherapy. Note: $n = 41$.

Perspectives of students who reported no interest in specializing in cardiorespiratory physiotherapy

Forty-two students (35%) stated that they had no interest at all in specializing in CRP. The most common factors influencing this decision were the clinical aspects of CRP and exposure or experiences in the area, and the most common factors having no influence on this decision were job accessibility, potential salary, the potential for research, and the influence of others (see Figure 5). Of these 42 students, 15 (36%) reported that other factors had influenced them to consider not specializing in CRP. These factors were interest in another area; overlapping job scope with respiratory therapist, kinesiologist, and respiratory technician; ability of CRP to be practised in other physiotherapy settings (e.g., neurology and pediatrics); the perception that input was not valued in a hospital setting; poor clinical experience; and the perception that CRP is repetitive and not challenging.

When students who reported no interest in specializing in CRP were asked whether anything could influence them to specialize in the area, 30 students (71%) stated that nothing could influence them, and 11 (26%) reported that some factors could influence their decision. These factors were expanded intervention options if nothing else was available, job security, accessibility and salary, positive experiences in clinical placements with a feeling that they were making a difference, and a job that involved different areas of physiotherapy, including CRP.

DISCUSSION

This survey revealed that only a small percentage (13%) of physiotherapy students were extremely or quite interested in specializing in CRP. The most common factors that positively influenced them were job accessibility, potential salary, and exposure or experiences in the area. Of those students who were not at all interested

in specializing in CRP, the most common factor that positively influenced their decision was a greater interest in another area of physiotherapy (e.g., musculoskeletal, pediatrics, neurology, or sports). The most common factors that negatively influenced their decision were certain clinical aspects of CRP as well as exposure or experiences in the area.

Our findings are in line with the studies published by Reeve and colleagues from Australia and New Zealand⁴ and by Roskell and Cross from the United Kingdom,⁵ which reported that only a small number of students intended to specialize in CRP. This lack of interest could have negative implications for recruiting physiotherapists to work in cardiorespiratory care; it may also affect the continued role of physiotherapists in this practice area and potentially the treatment of individuals with acute and chronic cardiac and lung disease. Like the study by Reeve and Cross,⁴ our survey found that the most influential factor that deterred students from intending to work in CRP was a greater interest in another area of physiotherapy.

Although interest in other areas of physiotherapy may be intrinsic and consequently difficult to influence, increasing students' knowledge of the existing scope of CRP might promote its attractiveness. It might also be helpful to incorporate knowledge of cardiopulmonary conditions and sequelae into the assessment and treatment of patients, regardless of diagnosis. For example, physiotherapists could apply their cardiorespiratory skills, such as airway clearance and inspiratory muscle training, to a neurological setting, and knowledge of asthma management could be important when managing musculoskeletal issues in an asthmatic athlete.

Extrinsic factors that deterred students from considering specializing in CRP could be modifiable and could influence their decision. When students who reported

no interest were asked whether anything could influence them to specialize in CRP, 26% remained open minded and reported that some modifiable factors could influence their decision; these included expanded intervention options, job security, accessibility and salary, positive experiences in clinical placements, and a job that involved different areas of physiotherapy, including CRP.

Clinical experience (negative or positive) was an important factor in students' decision to specialize, or not, in CRP. This finding highlights the strong influence that clinical educators and practice placements have on students' career choices and how important it is for physiotherapy programmes to have creative and efficient strategies to expose students to a positive clinical experience. Examples of these strategies are peer-assisted learning and communications technology (e.g., blogging); these have been shown to assist students with reflective practice and clinical reasoning, reduce their anxiety, help create a safe learning environment, develop their collaborative skills, and increase feedback capability among students.^{10,11}

Our survey revealed that mentorship is an important factor in students' decisions regarding working in the area of CRP. In fact, 64% of the students who reported some interest in specializing in CRP stated that a role model or mentor had influenced them. This finding is in keeping with those of the surveys conducted in Australia, New Zealand, the United Kingdom, and Canada,^{4,5,7} in which physiotherapy students and experienced physiotherapists reported that their career choice had been influenced by positive mentorship experiences. Mentorship during university studies and the early stages of a career has been shown to play a significant role in productivity, job satisfaction, and developing expertise.^{12,13} Our survey identified both clinical educators and professors as being the most influential persons in a student's decision to pursue CRP; this indicates that positive mentorship experiences are essential in both clinical and academic settings. Another influential element had a social context: Our survey revealed that the opinions of peers negatively influenced the students in choosing CRP as a career path. Thus, more positive views of CRP and a greater number of individuals involved may have a snowball effect, resulting in more students becoming interested in this area.

Our survey also identified that students perceived the scope of CRP to overlap with that of other health care professionals, such as respiratory therapists, kinesiologists, and respiratory technicians. Clear information about the scope of practice of physiotherapists in cardiorespiratory care, the unique skills they possess, and how they contribute to an inter-professional team should be emphasized in academic and clinical settings. It is interesting that the surveys conducted in Australia, New Zealand, and the United Kingdom^{4,5} also found that only a small percentage of the students surveyed were interested in

specializing in CRP, despite the fact that the scope of CRP is broader in those countries (the respiratory therapy profession does not exist). This shows that the decision about whether to specialize in CRP is multi-factorial.

The finding that before beginning their physiotherapy program, only 32% of the students were aware that physiotherapists had a role in the management of cardiorespiratory conditions reflects the public's poor awareness of this role. As suggested by Roskell and Cross,⁵ universities and physiotherapy regulatory bodies in Canada should implement strategies to raise public awareness of the role of physiotherapists in different specialty areas; this may also result in attracting more students to CRP.

Our study presents some limitations. Although the sampling pool had regional representation and drew on the three largest academic programmes in Canada, it did not include students from all physiotherapy programmes in Canada, which may affect the generalizability of our findings. Also, students may have interpreted the concept of specialization in an area of physiotherapy in different ways. The clinical specialty program outlined by the Canadian Physiotherapy Association (CPA)¹⁴ requires more than taking postgraduate courses; it has a multi-modal approach of continuing education, research, clinical skills, and evaluation from peers and clients. At this early stage of their careers, students might not have been fully aware of how to become a designated specialist and might have focused their interest in specialization mainly on what postgraduate courses were offered. Postgraduate courses in manual therapy (musculoskeletal) and sports are formally structured, and more courses are available; this might be appealing to new graduates who are trying to learn additional clinical skills. There are fewer courses available in CRP than in orthopaedic physiotherapy and no set path of progression, which may influence how a new graduate perceives specialization in this area. However, more recently, the Cardiorespiratory Division of the CPA has increased the number of graduate courses that it offers, but their impact on students' career choices remains to be determined.

CONCLUSIONS

This survey revealed important factors influencing students' decisions about whether to specialize in CRP in Canada. Strategies focusing on increasing students' awareness of the role of physiotherapists in the care of patients with cardiorespiratory conditions, exposing them to the positive impact that physiotherapists have in this practice area, and good mentorship experiences could all promote the attractiveness of this specialty. These strategies should be a collaborative effort by the different groups associated with the profession—that is, academic institutions, regulatory bodies, and professional associations. Further research is required to explore new approaches to improving students' interest in specializing

in CRP as well as incorporating CRP principles into other practice settings.

KEY MESSAGES

What is already known on this topic

Few physiotherapy students intend to pursue employment and specialization in the area of cardiorespiratory physiotherapy (CRP). Surveys conducted in Australia, New Zealand, and the United Kingdom have explored what factors influence this lack of interest and found several: the lack of exposure to patients with cardiorespiratory problems, the lack of a role model, the limited potential for postgraduate studies and research, limited job accessibility, and a perception that CRP requires a lower level of competency.

What this study adds

Because the structure of the physiotherapy schools and health care environments in Canada may differ from the ones in Australia, New Zealand, and the United Kingdom, our study investigated the factors that influenced students' decision to choose (or not) to pursue a career in CRP in a Canadian context. We found that the most common factors that positively influenced their decision were job accessibility, potential salary, and experiences in the area. The most common factors that negatively influenced their decision were the clinical aspects of the area, their experiences in the area, job accessibility, and the influence of others.

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