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ORIGINAL RESEARCH

Continuing professional development, training opportunities, and research participation of pulmonary rehabilitation programs in Canada: A rural versus urban comparison

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ABSTRACT

RATIONALE: The geographical setting of pulmonary rehabilitation (PR) is changing. More programs are located in communities that are far-removed from urban sites. These rural programs may not have the same access to clinical trainees and research opportunities as urban programs and may have different educational needs.

OBJECTIVE: To identify the clinical training opportunities, research participation, and continuing professional development (CPD) interests of rural versus urban health care professionals (HCP) in PR.

METHODS AND MEASUREMENTS: HCP from PR programs in Canada answered on-line questions regarding preferred CPD topics; preferences of how CPD should be delivered; training opportunities available for students in different health disciplines; and participation in PR research. Programs were categorized as "rural" if they served a community $< 30{,}000$ individuals.

MAIN RESULTS: 83% of programs completed the survey ($n = 122$). Thirty-five percent of programs were considered rural. The top-ranked topics for CPD for rural and urban PR programs were exercise monitoring and progression; behavior change strategies; collecting data for quality improvement; and patient education. Rural programs were more likely to choose workshops/courses as their preferred method of CPD (67% versus 49%; $p = 0.04$). Only 28% of rural programs accepted medical, physiotherapy, or respiratory therapy clinical trainees compared to 70% of urban programs ($p < 0.0001$). Thirty-six percent of urban programs had previously participated in research versus only 16% of rural programs ($p = 0.011$).

CONCLUSIONS: Urban and rural programs had similar topics of interest for CPD but different preferred methods of delivery. The lack of training opportunities and exposure to research in rural programs should be addressed.

RÉSUMÉ

JUSTIFICATION: La situation géographique de la réadaptation pulmonaire est en train de changer. De plus en plus de programmes sont situés dans des collectivités éloignées des centres urbains. Ces programmes ruraux n'ont pas toujours le même accès aux stagiaires cliniques et aux possibilités de recherche que les programmes urbains, et peuvent avoir des besoins différents en matière d'éducation.

OBJECTIF: Répertorier les occasions de formation clinique, de participation à des travaux de recherche et de développement professionnel continu en réadaptation pulmonaire pour les professionnels de la santé en milieu rural comparativement aux professionnels de la santé en milieu urbain.

MÉTHODES ET MESURES: Des professionnels de la santé de programmes de réadaptation pulmonaire au Canada ont répondu à des questions en ligne concernant leurs sujets de développement professionnel continu préférés; leurs préférences quant à la façon dont la formation professionnelle continue devrait être mise en œuvre; les occasions de formation pour les étudiants dans différentes disciplines de la santé; et la participation à des travaux de recherche sur la réadaptation pulmonaire. Les programmes étaient considérés « ruraux » s'ils desservaient une collectivité de moins de 30 000 personnes.

PRINCIPAUX RÉSULTATS: Quatre-vingt trois pour cent des programmes ont répondu au sondage ($n = 122$). Trente-cinq pour cent des programmes étaient considérés ruraux. Les sujets en tête de liste en ce qui concerne le développement professionnel continu pour les programmes de réadaptation pulmonaire ruraux et urbains étaient le suivi des exercices et la progression; les stratégies de changement de comportement; la collecte de données pour l'amélioration de la qualité et l'éducation des patients. Les programmes ruraux étaient plus susceptibles de préférer les ateliers ou les cours en tant que méthode de développement professionnel continu (67% comparativement à 49%); $p = 0{,}04$). Seulement 28% des programmes ruraux acceptaient des stagiaires cliniques en médecine, en physiothérapie ou en inhalothérapie, comparativement à 70% des programmes urbains ($p < 0{,}0001$). Trente-six pour cent des programmes urbains avaient participé à des travaux de recherche par le passé, comparativement à seulement 16% des programmes ruraux ($p = 0{,}011$).

KEYWORDS
Pulmonary rehabilitation; rural health care; continuing professional development

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CONCLUSION: Les programmes urbains et ruraux s'intéressaient à des sujets similaires pour la formation professionnelle continue, mais ils préféraient des méthodes de mise en oeuvre différentes. Il conviendrait de remédier au manque d'occasions de formation et d'exposition à la recherche dans les programmes ruraux.

Introduction

Pulmonary rehabilitation (PR) is an evidence-based exercise, education and behavioral modification intervention for individuals with chronic obstructive pulmonary disease (COPD)[1,2] and other chronic lung diseases,[3,4] delivered by a multidisciplinary team. For PR to be high quality and delivered based on the best evidence, clinicians in the relevant disciplines should receive appropriate entry-level training related to their scope of practice, and remain competent through continuing professional development (CPD) and/or confirmation of continued competence.

There are several guidelines[2,5] and statements[1] that provide specific recommendations for best practices in PR. The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) accredits PR programs in the United States, details specific core competencies,[6] and provides CPD opportunities for health care professionals (HCP) working in PR programs. However, clinician entry-level competence and program accreditation requirements have not been established in many countries. In 2015, the Royal College of Physicians in the United Kingdom initiated a pilot project to test the methodology of accrediting PR services[7] in conjunction with work to develop quality standards for programs. Australia does not have an accreditation process, but the Lung Foundation of Australia has developed an on-line training program in PR for CPD purposes (http://lungfoundation.com.au/health-professionals/training-and-education/pulmonary-rehabilitation-training-online/). Accreditation also does not occur for most programs in Europe, although the European Respiratory Society has a comprehensive on-line and workshop-based CPD course (https://www.ersnet.org/professional-development/courses/pulmonary-rehabilitation). In Canada, there are several organizations (eg, Canadian Thoracic Society; Canadian Physiotherapy Association); networks (eg, Pulmonary Rehabilitation Network of British Columbia http://prrl.rehab.med.ubc.ca/bc-pulmonary-rehabilitation-network/) and educational programs (eg, https://resptrec.org/) that offer continuing education and other professional development opportunities, but these CPD opportunities are not mandatory, are not part of an over-arching curriculum strategy, and may not be available to all HCP.

Historically, PR programs in Canada were primarily located in hospital settings in urban locations where CPD opportunities such as conferences, workshops and in-services are often readily available. However, the geographical setting of PR is changing in Canada. In a previous publication, we reported that 40% of Canadian PR programs are now located in health units, community centres, or delivered via telehealth.[8] Many of these programs are located in rural or remote geographical locations. In general, rural Canadian communities have a high prevalence of chronic disease.[9,10] For example, in British Columbia (BC), the prevalence of smoking is higher in rural and northern areas compared to urban settings,[9,11] and, subsequently, the prevalence of COPD in the BC's Northern Health Authority is more than twice as high as the more urban health authorities.[12]

Despite the higher burden of chronic disease and the need for health care services, less than 10% of rehabilitation HCP are located in rural communities.[13] Encouraging HCP to choose to work in a rural setting is a challenge. Several qualitative studies that examined the factors associated with starting and continuing to work in a rural setting were combined in a meta-synthesis by Roots and Li,[14] who reported that continuing professional development and available support were important determinants of choosing to work in a rural setting. However, there is a minimal amount of information on the current CPD needs of PR HCP in Canada, whether rural programs have different curriculum requirements and preferred methods for delivery for CPD compared to their urban counterparts, or whether PR programs in both urban and rural locations are involved in clinical training or research activities. Therefore, the purpose of this study was to analyze data from the Canadian Pulmonary Rehabilitation Survey to identify CPD interests and to explore clinical training opportunities of remote and rural PR HCP versus urban PR HCP in Canada. We also investigated the interest of Canadian PR programs to be involved in research and network opportunities.

Materials and methods

Program identification and survey development

A detailed explanation of the study methods was previously published.[8] In brief, we used a variety of strategies to identify PR programs in Canada. We conducted web searches using Google as well as identified programs through the Canadian Lung Association PR database (https://www.lung.ca/lung-health/get-help). We also contacted via telephone all hospitals in English-speaking Canada that are listed in the Scott's Medical Directory[15] and contacted all hospitals in Quebec via email and phone using the registry of the Regie de l'assurance maladie du Quebec. After confirming that a PR program existed in that location, we followed with an email invitation to complete the survey, followed by a consent form and a link to the survey.

The survey was created using items from existing surveys in Canada,[16,17] Europe[18] and the United States;[19] and from expert opinion from the members of the Canadian Thoracic Society COPD Clinical Assembly. The final version of the survey was web-based using Fluidsurvey (Fluidsurvey.com) and included over 175 items separated into 16 domains, with one domain dedicated to questions about education needs and types of delivery (see Table 1 for the list of questions). There were also open text boxes available where respondents could provide additional responses. Ethics approval for this study was granted by the University of British Columbia / Providence Health Care Research Ethics Board (Certificate H12-02380).

Table 1. List of questions related to continuing professional development, clinical training, and research interest.

1 What staff education topic is the most useful to improve your pulmonary rehabilitation program quality?
   a. exercise testing
   b. exercise monitoring and progression
   c. patient education
   d. outcome measures
   e. data collection for quality improvement
   f. smoking cessation
   g. behavior change strategies
   h. other (please provide details)
2 Which education format would best suit your program staff?
   a. workshops/courses
   b. webinars
   c. teleconferences
   d. journal clubs
   e. newsletters
   f. listserv, ask the expert
   h. other (please provide details)
3 Does your pulmonary rehabilitation program participate in research? Yes/No
4. If "no," would you be interested in participating in research? Yes/No
5. Is your pulmonary rehabilitation program a site for training health professional students/residents? Yes/No
6. If "yes," which disciplines are trained in your program? (select all that apply)
   a. dietitian
   b. exercise physiologist/kinesiologist
   c. nurse
   d. occupational therapist
   e. pharmacist
   f. physiotherapist
   g. psychologist
   h. family physician
   i. respiratory therapist
   j. social worker
   h. respirologist
   i. other (please provide details)

Data analysis

Programs were categorized as rural or urban based on the methodology of Statistics Canada (http://www.statcan.gc.ca/eng/subjects/standard/sgc/notice/sgc-06). The geographical location of each program was confirmed by the address and postal code given by the respondents. For each community in which a program was located, we identified the 2011 population size from the Statistics Canada Population Census database (http://www12.statcan.gc.ca/census-recensement/index-eng.cfm). Using Statistics Canada research methodology, we considered a rural community as one with a population of less than 30,000 individuals (considered a small population centre by Statistics Canada), regardless of population density. Counts and proportions, means and standard deviations, and median and interquartile ranges were calculated where appropriate. Comparisons between urban and rural programs were conducted using Mann-Whitney tests, chi-square tests, or Fisher exact tests where appropriate, with a significant level of $\alpha < 0.05$.

Results

Of the 155 programs identified, 129 programs responded to the survey (83% response rate), of which 122 programs completed questions on continuing professional development and formed the sample for this analysis. Forty-three (35%) programs were located in rural locations, and 79 (65%) in urban locations. Rural programs admitted fewer participants per year (median = 16, interquartile range (IQR) = 18) compared to urban programs (median = 50, IQR = 64; $p < 0.0001$).

Topics for continuing professional development

Both urban and rural programs picked the same four topics as their top selections for CPD, although the ranking of these topics differed between groups (Table 2). The four top-ranked topics for CPD for urban PR programs were exercise monitoring and progression (22%), followed by learning about behavior change strategies (19%), collecting data for quality improvement (13%), and patient education (11%). In contrast, patient education was the top CPD topic for rural programs (23%; difference between urban and rural $p = 0.048$), followed by exercise monitoring and progression (21%), collecting data for quality indicators (19%) and behavior change strategies (16%). Exercise testing, outcome measurement and smoking cessation were the top picks for less than 15% of programs which was similar regardless of location.

Format for delivering continuing professional development

Both urban and rural programs selected workshops/courses and webinars as their top methods for delivering CPD. Rural programs were significantly more likely to choose workshops/courses as their preferred method (67% versus 49%; $p = 0.04$). There was a trend toward a higher proportion of urban programs selecting webinars as their preferred method, although this difference was not significant (urban 37% versus rural 26%; $p = 0.08$).

Training opportunities for health care professionals

There was a notable lack of training opportunities overall in both urban and rural settings for the health disciplines typically responsible for delivering PR (eg, respirologists, physiotherapists (PT), respiratory therapists (RT) and nurses). Only 9% of programs trained respirologists in PR despite this training

Table 2. Continuing professional development topics and preferred delivery, by program location.

	Rural		Urban		
	n	%	n	%	p
Interest in CPD topic					
Exercise Monitoring & Progression	9	21	17	22	0.183
Behavior change strategies	7	16	15	19	0.185
Patient Education	10	23	9	11	0.048
Data collection for quality improvement	8	19	10	13	0.140
Exercise Testing	6	14	7	9	0.161
Outcome Measurement	0	0	6	8	0.069
Smoking cessation	1	2	5	6	0.240
Delivery of CPD					
Workshops, courses	29	67	39	49	0.041
Webinar	11	26	29	37	0.075
Teleconference	1	2	2	3	0.449
Newsletter	0	0	1	1	0.648
Listserv, ask the expert	1	2	1	1	0.460
Research participation	7	16	28	36	0.011

Note. CPD = continuing professional development.

being a specialist certification requirement.[20] Similarly, only 39% of programs offered training for PT students, 30% trained RT students and 29% trained nursing students. In general, there were few opportunities for clinical trainees to work in a rural PR program (Table 3). Only 28% (12 programs in total) of rural programs accepted clinical trainees from any of the eleven disciplines listed in the survey (Table 1) compared to 70% of urban programs ($p < 0.0001$). This lack of clinical training opportunities among rural programs was consistent across all the disciplines.

Research interest and participation

PR research was more likely to be located in urban programs. Thirty-six percent of urban programs had participated in at least one research project in the past, versus only 16% of rural programs ($p = 0.011$). Programs that had never participated in research were asked of their interest in doing so – a large majority of urban programs (70%) indicated their interest, while only 39% of rural programs were interested in participating in research ($p = 0.003$).

Discussion

In a study of CPD in Australian practitioners in remote locations, Ducat et al. noted "…the need for organizational initiatives to ameliorate professional isolation for rural and remote health providers and increase coordination of training and development to support best practice."[21] We recently reported[8] a shift in location of PR programs with more programs located in rural locations, and more programs housed in community centres and public health units. This shift in location away from urban, hospital-based settings may have implications for the supports and resources that health care professionals can access, and requires a specific and coordinated approach to CPD and clinical training for practitioners in remote and rural locations. In the current paper, we report significant differences between urban and rural programs in the types of education wanted, the education delivery system preferred, the training opportunities offered to clinical students, and program participation in research. To our knowledge this is the first study that has identified these needs across the entire national population of PR programs, and highlights the importance of considering program location.

CPD opportunities in PR are important in order for clinicians to maintain their skills and learn about new evidence. The content should be provided in a variety of learning formats to meet the needs of HCP in both urban and rural settings.[22] Both rural and urban programs in our study selected "workshops and courses" as their preferred delivery of CPD, although a significantly greater proportion of rural programs selected this option. This was in contrast to our expectations, as we anticipated that more rural programs would have selected "webinars" given the potential cost and difficulty of travelling. On further reflection, this may have been related to how the question was worded, as we did not ask respondents how far they would be willing to travel to attend such a course. Alternatively, it is possible that rural HCP would prefer to increase their face-to-face interactions with experts and colleagues in a workshop/course format. The preference of learning PR CPD skills in a workshop/course format is likely reflective of the CPD material itself. PR requires multiple skills in exercise testing, prescription, monitoring and progression; patient education; and counseling patients in various skills such as inhaler technique and smoking cessation.[6] A webinar or distance-based learning format may not be conducive to learning these advanced care skills.

The lack of clinical training opportunities in both urban and rural PR programs is a concern, as this is the primary method of building current and future PR expertise. Although 70% of programs in urban locations offered clinical training opportunities to at least one health discipline, fewer than half of programs offered training for PT, RT, nursing and respirology trainees, despite the fact that these disciplines are primarily charged with the delivery of this care. Although PT training in the classroom includes developing exercise, education and behavioral modification programs for individuals with chronic lung disease, the potential lack of exposure to PR programs as part of the clinical curriculum may affect the quality of care and patient-related program outcomes. RT training includes learning how to provide patient education one-to-one but it is important to practice these skills in a PR program, where patient education is often delivered in a group setting. In addition, RT curricula do not typically include the assessment, prescription, and progression of exercise.[23] Thus, RTs may be responsible for the development and delivery of PR programs despite little classroom or clinical exposure to exercise interventions, which are a cornerstone of PR. Specialist certification for respirologists in Canada explicitly states that exposure to PR is necessary;[20] yet, it is possible that this requirement is not being met. The lack of availability of clinical training within identified programs could result in 1) programs where staff do not feel confident in their skills and 2) programs that are "under-performing" in terms of enabling better health outcomes for patients.

The lack of clinical training opportunities in rural communities should be a specific focus of attention. In order to continue to support the growth of PR into settings outside of hospitals and into smaller communities, the working environment must be attractive for physicians, nurses and rehabilitation professionals. The 2013 meta-synthesis[14] of qualitative

Table 3. Clinical training available by discipline and program location.

	Rural		Urban		
	N	%	n	%	p
Any clinical training	12	28	54	70	<0.0001
Physical Therapist	7	16	40	51	0.0002
Nurse	3	7	32	41	<0.0001
Respiratory Therapist	4	9	32	41	0.0003
Occupational Therapist	1	2	16	20	0.0055
Exercise physiologist/Kinesiologist	1	2	15	19	0.0099
Dietitian	1	2	14	18%	0.0182
Respirologist	0	0	11	14	0.0078
Family Physician	1	2	9	11	0.0967
Social Worker	0	0	7	9	0.0509
Pharmacist	1	2	5	6	0.4229
Psychologist	0	0	5	6	0.1604

studies on recruitment and retention of occupational and physiotherapists in rural settings found recruitment and retention of rehabilitation professionals depended on 1) the availability of professional support, including having adequate resources and access to CPD; 2) opportunities for professional growth; and 3) having managers understand the context of rural practice. Another qualitative study by Roots et al.[24] explored rural rehabilitation and found that rehabilitation professionals who practice in rural communities considered their practice "a specialty requiring advanced skills" and were often working with specialist or expert support. As such they were often "stretching their roles" to overcome resource (including health human resource) deficiencies. Therefore, to be competent in a rural rehabilitation practice area, prior exposure and specific training in the realities of rural practice are warranted.[22,24]

Research participation, and correspondingly, research interest, was low in rural programs. Although research activity is often situated in universities and teaching hospitals in urban centres, there is a large untapped potential in rural and remote programs. With the growing interest of various tele-technologies in pulmonary rehabilitation,[25] the possibility of including remote and rural programs in research partnerships is high, and may have the added benefit of increasing CPD opportunities and learning for these sites.

Our study was limited to examining the preferences of HCP working in one country. Although the sample size was not large, we had a very high respondent rate (83%) which increases our confidence that the findings are valid and reflective of practice in Canada. We did not ask respondents to provide detailed reasoning about their responses and qualitative work to explore the best methods for delivering CPD and clinical training opportunities is needed. This study does not specifically evaluate the clinical skills and training of healthcare providers in PR in Canada. In addition, we did not calculate how many programs were needed in order to train adequate numbers of PR health care professionals. While it is possible that the current numbers of training sites in urban settings is adequate, the absolute value of 12 rural programs in Canada offering clinical training is unlikely to be enough.

Conclusion

The practice of PR is changing. More programs are situated outside of the hospital setting, and in communities that are far-removed from urban sites. This increases access for patients by situating more programs where patients live. However, the risk of HCP isolation and a potential drift away from current evidence-based practice is a concern for these programs, and the lack of training opportunities (in both urban and rural programs) means that new generations of HCP may be ill-equipped to deliver this important treatment for people with chronic lung disease in rural settings. Similarly, the low level of research engagement means that our understanding of rural PR practice is limited. A coordinated rural rehabilitation health service delivery plan that articulates and supports training, continuing professional development and research engagement is urgently needed.

Declaration of interest

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