Dissemination of Student Research in a Canadian Master of Science in Physical Therapy Programme

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ABSTRACT

Purpose: To determine the extent of presentation and publication, as well as time to publication, of student research completed as a component of a Master of Science in Physical Therapy (MScPT) degree at a Canadian university. **Method:** The authors conducted a retrospective cross-sectional study of MScPT research projects completed between 2003 and 2009, each undertaken by a group of MScPT students who carried out protocol development, ethics submission, data collection, analysis, and manuscript and poster preparation under the supervision of research advisors. Research advisors were e-mailed a request for citations of presentations and publications. **Results:** Advisors from 102 of 113 research projects completed from 2003 through 2009 provided information, for a response rate of 90.3%. Of the 102 groups, 53.9% disseminated findings through publication or presentation, 33.3% presented at one or more conferences, and 30.4% published at least one peer-reviewed journal article. Median time to publication was 21 months. Almost half the journal articles (47%) were published in *Physiotherapy Canada*. **Conclusions:** MScPT student research groups are disseminating their findings through publication or presentation at a moderate rate. Investigation of factors influencing dissemination is needed to develop strategies to facilitate knowledge transfer.

Key Words: congresses as topic; health occupations; physical therapy specialty; publications; research; students.

RÉSUMÉ

Objectif : Établir l'étendue de la présentation et de la publication ainsi que le moment de publication des travaux de recherche réalisés par des étudiants dans le cadre de leur maîtrise ès sciences en physiothérapie (M.Sc.PT) dans une université canadienne. **Méthodologie :** Les auteurs ont réalisé une étude transversale rétrospective des projets de recherche à la maîtrise ès sciences en physiothérapie réalisés de 2003 à 2009 par des groupe d'étudiants à la maîtrise qui ont élaboré un protocole de recherche, préparé les documents d'approbation éthique, recueilli les données, procédé à l'analyse et rédigé le manuscrit et les affiches sous la supervision de conseillers en recherche. Un courriel a été envoyé aux conseillers en recherche en vue d'obtenir des citations des présentations et des publications. **Résultats :** Les conseillers de 102 des 113 projets de recherche réalisés de 2003 à 2009 ont livré l'information demandée, soit un taux de réponse de 90,3%. Des 102 groupes de ces conseillers, 53,9% ont fait connaître les conclusions des études par des publications ou des présentations, 33,3% ont présenté au moins une conférence et 30,4% ont publié au moins un article dans une revue à comité de lecture. Le délai moyen de publication était de 21 mois. Près de la moitié des articles de revue (47%) ont été publiés dans *Physiotherapy Canada*. **Conclusions :** Un nombre modéré de groupes de recherche d'étudiants à la M.Sc.PT font connaître les conclusions de leurs travaux par des publications ou dans le cadre de présentations. Une recherche plus poussée sur les facteurs qui influent sur la diffusion de leurs travaux est nécessaire pour élaborer des stratégies qui pourront faciliter le transfert des connaissances.

The role of *scholarly practitioner* is one of seven professional roles that physical therapists in Canada are expected to fulfil.¹ This role requires competently engaging in a reflective approach to practice, engaging in scholarly inquiry, and incorporating lifelong learning and experiences into best practice.¹ Entry-level physical therapy

degree programmes apply several education strategies, including a requirement to conduct research, to foster competency in the scholarly practitioner role.

The Master of Science in Physical Therapy (MScPT) degree programme at the University of Toronto, Canada, is a 24-month, course-based professional programme

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leading to entry to practice.² Groups of four or five students participate in a capstone exercise that involves conducting a research project under the supervision of one or more research advisors. Students develop a research proposal, obtain ethics approval, collect and analyze data, and prepare a manuscript. Since 2007, students have also been required to prepare a poster for presentation at an annual MScPT research day. Physical therapists with a bachelor's degree may enrol in the one-year Advanced Standing programme² and participate in the MScPT research curriculum to obtain an MScPT degree.² Advanced Standing students attend lectures with the MScPT students but, because of the part-time nature of the programme, conduct their research in separate groups.

Following the MScPT research day, student research groups are expected to disseminate their research findings through conference presentation or publication, but the extent to which they do so is not known. While rates of publication following the presentation of study abstracts have been documented,³ evidence of publication rates among trainee health professionals is limited to medical students and residents.^{4–6} Our objective in this study, therefore, was to determine the extent of presentation and publication, as well as the time to publication, of student research undertaken as part of the requirements for an MScPT degree at the University of Toronto.

METHODS

Study design and participants

We conducted a retrospective cross-sectional study of advisors who supervised MScPT or Advanced Standing projects completed between 2003 and 2009, incorporating a minimum 2-year follow-up period to allow sufficient time for publication.

Procedure

In May 2011, we e-mailed 393 eligible advisors the title and year of each project in which they had participated and requested citations for any dissemination activity, including peer-reviewed and non-peer-reviewed presentations and publication of findings. In September 2011, we sent a reminder e-mail to non-responders, including an option for advisors to forward their *curriculum vitae*, from which we could extract pertinent citations. Citations for published articles were verified either by searching the journal directly online or via PubMed.

Data analysis

Frequencies and percentages of groups giving conference presentations or publishing a peer-reviewed journal article were determined for each year and overall. By consensus among the authors, we considered presentation/publication rates of 0%–30% as *low*, 31%–60% as

moderate, and 61%–100% as *high*. We classified presentations as *international*, *national*, *provincial*, or *local* based on the conference title. Time in months from project completion to the earliest month of publication, either online or in print, was determined. We did not seek ethics approval for the study, as data were collected as part of a programme evaluation.

RESULTS

A total of 113 research projects were completed between 2003 and 2009. At least one advisor from 102 of these projects responded and provided information, for a response rate of 90.3%. Of the 102 projects, 95 were completed by MScPT students and 7 by Advanced Standing students. Table 1 summarizes the characteristics of research groups, presentations, and publications.

Of the 102 groups, 55 (53.9%) disseminated findings through a presentation or by publishing an article in a peer-reviewed journal. Research groups presented most frequently at the congresses of the Canadian Physiotherapy Association (16, 37%) and the World Confederation for Physical Therapy (8, 19%). The three journals in which research groups most frequently published were *Physiotherapy Canada* (15, 47%), *Disability and Rehabilitation* (3, 9%), and *Archives of Physical Medicine and Rehabilitation* (3, 9%); median time to publication was 21 months. The number of peer-reviewed journal articles published, at increasing time intervals from the point of MScPT project completion, were as follows: 0–1 year: 4 (13%); >1–2 years: 18 (56%); >2–3 years: 4 (13%); >3–4 years: 4 (13%); >4–5 years: 2 (6%). Appendix 1 (online) lists the conference and journal citations.

DISCUSSION

Over a 7-year period, the overall rate of dissemination through presentation or publication following completion of mandatory MScPT student research projects was moderate (53.9%). The overall rate of conference presentation alone (33.3%) was also moderate, and well below the rate of 69.2% observed in a study that examined 104 supervised research projects completed by medical residents in the United States.⁶ Differences may be attributed to the requirement for medical residents to complete two research studies, in contrast to the one project required in the MScPT programme, and to the availability of financial support for medical residents; the MScPT programme currently covers the cost of poster printing but does not fund travel to conferences. Our findings suggest that presentation rates gradually increased over the study period, from 23.5% in 2007 to 44.4% in 2009, perhaps as a result of the requirement to develop posters beginning in 2007.

The overall rate of publication observed (30.4%) is low, given that students complete a manuscript as part of the curriculum. Publication rates also appear to have increased over time, from <20% in 2003–2005 to >20%

Table 1 Characteristics of MScPT Student Research Groups, Response Rates, Presentations, and Publications, 2003–2009

Characteristics	Year							Total
	2003	2004	2005	2006	2007	2008	2009	
No. of projects								
MScPT	11	13	14	16	17	17	17	105
AS	0	0	3	1	1	2	1	8
Total	11	13	17	17	18	19	18	113
No. of students per group								
% with 4	54	85	28	25	0	41	24	34
% with 5	45	15	71	75	100	59	76	66
Advisors per group, median (range)	2 (1–3)	4 (2–5)	4 (2–8)	3.5 (2–6)	3 (2–7)	3 (3–5)	4 (2–7)	3 (1–8)
Groups responding, no. (%)	7 (63.6)	10 (76.9)	16 (94.1)	15 (88.2)	17 (94.4)	19 (100)	18 (100)	102 (90.3)
Groups presenting at least once, no. (%)	3 (42.9)	3 (30.0)	6 (37.5)	4 (26.7)	4 (23.5)	6 (31.6)	8 (44.4)	34 (33.3)
No. of presentations								
International	1	1	5	4	0	1	3	15
National	2	2	4	0	2	4	4	18
Provincial	0	0	0	0	0	1	3	4
Local	1	1	0	0	3	1	0	6
Total	4	4	9	4	5	7	10	43*
Groups publishing at least 1 article, no. (%)	1 (14.3)	1 (10.0)	2 (12.5)	9 (60.0)	8 (47.1)	6 (31.6)	4 (22.2)	31 (30.4)
Total no. of articles published	1	1	2	9	8	7	4	32†

*Nine research groups (8.8%) presented more than once.

†One research group (1.0%) published twice.

MScPT = Master of Science in Physical Therapy; AS = Advanced Standing.

in 2006–2009. In a 1994 study, a publication rate of 50% observed among medical students and residents conducting supervised research was ascribed to early selection of projects, department financial support, and intensive direction and assistance from advisors.⁶ Additional factors may include the scope of projects, the number of publication venues for medical versus physical therapy research, career pressure to publish, and programme length.

The majority of MScPT student research groups that published a peer-reviewed journal article (56%) did so within 2 years of completing their research project; approximately one-third (32%), however, did so between 2 and 5 years after project completion. The timing of project completion (at the end of the MScPT programme) may pose challenges for dissemination, as graduates have competing priorities such as securing employment. Findings from a systematic review showing that time to publication ranges from 9 to 36 months indicate that the challenge of achieving timely publication is widespread.³

The majority of presentations were given at national or international conferences, and all articles were published in national or international peer-reviewed journals. This highlights the potential for MScPT students' research findings to influence practice within and outside of Canada.

LIMITATIONS

Research advisors for 11 student groups, primarily from 2003 to 2004, did not respond to our invitation to

participate. If we assume that this was because these groups failed to present or publish, then the overall rates of presentation and publication would be 30.1% (vs. 33.3%) and 27.4% (vs. 30.4%), respectively. On the other hand, it may be that we have underestimated the overall publication rate due to an insufficient follow-up period for projects completed in 2008 and 2009, given that 32% of articles were published between 2 and 5 years after project completion.

CONCLUSIONS

MScPT student research groups at the University of Toronto are disseminating their findings through presentation and publication at a moderate rate. Investigation of factors influencing achievement of these activities is needed to inform the development of strategies to increase the rate and diversity of knowledge dissemination from MScPT student research.

KEY MESSAGES

What is already known on this topic

MScPT students at the University of Toronto are required to conduct a supervised group research project and are expected to disseminate their findings.

What this study adds

This is the first known study to investigate research dissemination among physical therapy students in Canada. More than half of MScPT student research groups at the University of Toronto disseminate results through either publication or presentation; the rate of

presentation alone is moderate, and the rate of publication alone is low. Investigation of factors influencing knowledge dissemination is needed.

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Appendix 1: Summary of Knowledge-Translation Activities, 2003–2009

PRESENTATIONS (*N* = 43)

*Indicates a project that produced two presentations.

International (*n* = 15)

1. Newbold ME, Foris J, Kirk JC, et al. The clinical usefulness and validity of the 2-versus the 6-minute walk test in adults with Cystic Fibrosis. North American Cystic Fibrosis Conference; 2004 Oct; St. Louis (MO).
2. Hesketh K, Karp G, Kwan N, et al. Is group task-specific training feasible in the complex continuing care population? World Congress of Physical Activity and Aging; 2004 Aug; London (ON).
- *3. Adams K, Beriault R, Buttle ML, et al. Patients' expectations of their physiotherapist in the outpatient setting in adults with cystic fibrosis. North American Cystic Fibrosis Conference; 2005 Oct; Baltimore (MD).
- *4. Danells C, Reynolds C, Paulenko T, et al. Assessing the influence of hands-on facilitation on post-stroke recovery. NDTA Annual Conference—"Muscles in Action"; 2006 Oct; Stamford (CT).
- *5. Damignani R, Harvey B, Bradley C. A new approach to the management of idiopathic clubfoot: results from a family satisfaction survey. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
6. Goetz L, Holmes M, Marston K, et al. An exploration of the functional mobility recovery of children following surgical resection of posterior fossa tumour. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
7. O'Brien MM, Takeuchi R, Ormond KB, et al. Moving forward: success from a physiotherapist's point of view. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
8. Chau L, Hegedus L, Praamsma M, et al. Women living with a spinal cord injury and perceptions about their changed bodies: A qualitative analysis. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
9. Allapat C, McFarland J, McGovern B, et al. The role of physical therapists in global health initiative: A SWOT analysis. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
10. Paul J, Park L, Ryter E, et al. Delisting publicly-funded community based physical therapy services in Ontario, Canada: a 12-month follow-up study. World Confederation for Physical Therapy Congress; 2007 Jun; Vancouver (BC).
- *11. Danells C, Reynolds C, Paulenko T, et al. Assessing the influence of "hands-on" facilitation on post-stroke recovery. International Bobath Instructors' Conference; 2007 Aug; Sydney.
12. Boudreau J, Czettisch A, Dai Y, et al. Worker compliance with glove recommendations following the diagnosis of hand-arm vibration syndrome (HAVS). American Industrial Hygiene Conference and Expo; 2009 Feb; Toronto (ON).
- *13. Ibey R, Chung R, Benjamin N, et al. Development of a challenge assessment tool for use with high functioning children with an acquired brain injury: bridging the measurement gap [abstract 0451]. Eighth World Congress on Brain Injury; 2010 Mar; Washington (DC).
14. Chau J, Chadbourn P, Mok S, et al. Continuing education for advanced manual and manipulative physiotherapists in Canada: a survey of perceived needs. World Confederation for Physical Therapy Congress; 2011 Jun; Amsterdam.
15. Alexander E, Rosenthal S, Evans C. Physiotherapy obesity management: a Canadian consensus study. World Confederation for Physical Therapy Congress; 2011 Jun; Amsterdam.

National (*n* = 18)

16. Butt B, Gomperts M, Island P, et al. Evaluation of a fitness program for clients with Multiple Sclerosis: a series of case reports. Canadian Physiotherapy Association Congress; 2004; Quebec (QC).
- *17. O'Callaghan L, Glover P, Kestenberg J, et al. Physiotherapy length of stay in high risk surgical patients: can it be predicted with a preoperative two minute walk test and does preoperative physiotherapy education have an effect? A pilot study. Canadian Physiotherapy Association Congress; 2005 May; Victoria (BC).
- *18. Nussbaum EL, Burke S, Johnstone L, et al. Use of electrotherapy in outpatient orthopaedic physical therapy practice in Metro Toronto: implications for the education of current and future physical therapists. Canadian Physiotherapy Association Congress; 2005 May; Victoria (BC).
19. Taylor L, Goodman K, Soares D, et al. Accuracy of assignment of orthopaedic inpatients to receive weekend physical therapy services in an acute care hospital. Canadian Physiotherapy Association Congress; 2005 May; Victoria (BC).
- *20. Damignani R, Harvey B, Bradley C. A new approach to the management of idiopathic clubfoot: results from a family satisfaction survey. Canadian Association of Pediatric Health Centre (CAPHC) 2005 Annual Meeting—"Healthy Bodies, Healthy Minds for Canada's Children and Youth"; 2005 Oct; St. John's (NL).
21. Gordon M, Englehart J, Montgomery S, et al. The perceived consequences of delisting publicly funded, community based physical therapy services in the greater Toronto area. Canadian Physiotherapy Association Congress; 2006 Jun–Jul; Saint John (NB).
- *22. Adams K, Beriault R, Buttle ML, et al. Patients' expectations of their physiotherapist in the outpatient setting in adults with cystic fibrosis. Canadian Physiotherapy Association Congress; 2006 Jun–Jul; Saint John (NB).
23. Ponikvar A, Aprile G, Ganesh C, et al. Important aspects of inpatient physical therapy services as identified by patients in an acute care setting: a qualitative study. Canadian Physiotherapy Association Congress; 2006 Jun–Jul; Saint John (NB).
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26. Maloni P, Habbous J, Primmer A, et al. Exploring the perceptions of disability among mothers of children with disabilities in Bangladesh. Canadian Physiotherapy Association Congress; 2009 May; Calgary (AB).
27. Pashley E, Powers A, Buivids R, et al. Discharge from outpatient orthopaedic physiotherapy: a qualitative descriptive study of physiotherapists' practices. Canadian Physiotherapy Association Congress; 2009 May; Calgary (AB).
28. Crawford E, Leggett A, Huang A, et al. Examining international clinical internships for Canadian physical therapy students: the history, the trends, the future. Canadian Physiotherapy Association Congress; 2009 May; Calgary (AB).
- *29. Cornell S, Fung D, Geary J, et al. Ability of provocative tests to detect acromioclavicular joint arthritis in people undergoing arthroscopic subacromial decompression: a pilot study (AL054). Canadian Physiotherapy Association Congress; 2009 May; Calgary (AB).

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31. O'Reilly K, Campbell R, MacDonell K, et al. Investigation of dynamic stability during the transition from level ground walking to a change in surface height in healthy young adults. 16th Bienial Conference of the Canadian Society of Biomechanics; 2010 Jun; Kingston (ON).
- *32. Clegg H, Fernandes C, Parsley D, et al. Community balance and mobility scale (CB&M): age-related reference values. Canadian Physiotherapy Association Congress; 2010 Jul; St. John's (NL).
33. Fisher ME, Aristone MN, Young KK, et al. Physiotherapy models of service delivery, staffing, and caseloads: a profile of level 1 trauma centres across Canada. Canadian Physiotherapy Association Congress; 2010 Jul; St. John's (NL).

Provincial (*n* = 4)

- *34. Cornell S, Fung D, Geary J, et al. Ability of provocative tests to detect acromioclavicular joint arthritis in people undergoing arthroscopic subacromial decompression: a pilot study. Ontario Physiotherapy Association Conference; 2009 Mar; Toronto.
- *35. Ihey R, Chung R, Benjamin N, et al. Development of a challenge assessment tool for use with high functioning children with an acquired brain injury: bridging the measurement gap. Ontario Physiotherapy Association Congress; 2010 Mar; Toronto.
36. Di Nicolantonio L, Goncharova K, Laing M, et al. The presence of upper extremity musculoskeletal impairments in patients with hand-arm vibration syndrome (HAVS). Ontario Physiotherapy Association Conference; 2010 Mar; Toronto.
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Local (*n* = 6)

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Manuscripts Published in Peer-Reviewed Journals (*n* = 32)

*Indicates a project that produced two publications.

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