Inter-Professional Practices of Private-Sector Physiotherapists for Low Back Pain Management: Who, How, and When?

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ABSTRACT

Purpose: Although there have been increasing demands for health care providers to take part in inter-professional practices in recent years, very little attention has been paid to the actualization of such practices in the private sector. This study describes private-sector physiotherapists' inter-professional practices regarding low back pain (LBP) management and identifies organizational and provider-level variables associated with the intensity of such practices. **Method:** A total of 327 randomly selected physiotherapists were surveyed in the province of Quebec. Data were analyzed using descriptive and multiple regression analyses. **Results:** Physiotherapists reported frequent interactions with other physiotherapists (daily/weekly for 52.6%), family physicians (51.0%), and physiotherapy (PT) assistants (45.2%), but infrequent interactions with psychologists (3.6%), neurosurgeons (0.9%), and chiropractors (0.3%). Frequently reported means of interactions were written and oral messages sent through clients (55.1% and 24.1%, respectively), face-to-face unplanned discussions (41.9%), and faxed or mailed letters (23.2%). Variables associated with the intensity of inter-professional practices (mean of 6.7 [*SD* 1.7] out of 10 on the Intensity of Interprofessional Practices Questionnaire for Private Sector Physiotherapists) were related to physiotherapists' clientele, social activities with other providers, and perceptions of inter-professional practices as well as organizational models, vision, and provision of PT training. **Conclusions:** There is room to improve inter-professional practices with private-sector physiotherapists involved in managing LBP. Targets for action include physiotherapists and their workplaces.

Key Words: inter-professional relations; low back pain; private sector; survey.

RÉSUMÉ

Objectif : la collaboration entre intervenants a été fortement encouragée au cours des dernières décennies. À ce jour, on en sait toutefois peu sur les pratiques interprofessionnelles des physiothérapeutes du secteur privé. Cette étude décrit les pratiques interprofessionnelles des physiothérapeutes œuvrant dans le secteur privé auprès de personnes présentant de la douleur lombaire et identifie les variables organisationnelles et professionnelles associées à l'intensité de ces pratiques. **Méthode :** une enquête a été réalisée auprès de 327 physiothérapeutes du Québec sélectionnés de façon aléatoire. Les données ont été soumises à des analyses descriptives et de régression multiple. **Résultats :** les physiothérapeutes avaient des interactions fréquentes avec d'autres physiothérapeutes (quotidiennement ou hebdomadairement pour 52,6 % d'entre eux), des omnipraticiens (51,0 %) et des thérapeutes en réadaptation physique (45,2 %), alors qu'elles étaient peu fréquentes avec des psychologues (3,6 %), neurochirurgiens (0,9 %) et chiropraticiens (0,3 %). Ces interactions prenaient le plus souvent la forme de messages écrits ou oraux transmis par le client (55,1 % et 24,1 % respectivement), de discussions non planifiées (41,9 %) et de lettres postées ou télécopiées (23,2 %). Les variables associées à l'intensité des pratiques interprofessionnelles (scores

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moyens de 6,7/10 au Questionnaire d'intensité des pratiques interprofessionnelles des physiothérapeutes du secteur privé ; écart type de 1,7) étaient liées à la clientèle des physiothérapeutes, à leurs activités sociales avec d'autres intervenants et à leurs perceptions des pratiques interprofessionnelles, ainsi qu'aux modèles organisationnels, à la vision de l'organisation et à l'offre de stages en physiothérapie. **Conclusions :** il est possible de faire mieux sur le plan des pratiques interprofessionnelles des physiothérapeutes œuvrant dans le secteur privé auprès de personnes présentant de la douleur lombaire. Des cibles d'action se situeraient au niveau des physiothérapeutes eux-mêmes et de leur milieu de travail.

There are increasing demands for health care providers to take part in inter-professional practice models in health systems everywhere.^{1,2} The rationale underlying such demands includes the need to react to the fragmentation of knowledge into disciplines,³ to improve the efficiency and effectiveness of services in contexts of resource rationalization,⁴ and to ensure patient safety.⁵ As health care providers, physiotherapists are encouraged to take part in inter-professional practices that often refer to some form of interaction between and among professionals but that are also frequently associated with other attributes, such as sharing common goals and mutual confidence.^{6,7} In a 2011 policy statement, the World Confederation for Physical Therapy declared that "physical therapists practise in partnership with other health professionals to manage and provide services to patients/clients."^{8(p.1)} The statement viewed practising with other providers as serving the best interests of patients. In a position statement, the Canadian Physiotherapy Association described inter-professional collaboration as a prerequisite to offering efficient and effective person- and family-centred services.⁹

Inter-professional practices have mostly been recommended for the management of complex health problems.⁵ Low back pain (LBP) is one such problem and a major public health issue with enormous consequences,¹⁰ and physiotherapists regularly provide interventions to people with this problem.¹¹ Previous research on the management of LBP supports the need to involve different health providers.^{12,13} Although the literature pertaining to inter-professional practices is constantly increasing and physiotherapy (PT) is often included in studies in the field, the literature specifically focusing on clinic-based inter-professional practices involving physiotherapists is scarce in all work contexts and with all types of clients.¹⁴ To our knowledge, no study has focused on private-sector physiotherapists' inter-professional practices in the context of managing LBP. In Canada, 44% of physiotherapists worked in the private sector in 2014,¹⁵ and PT in the private sector often plays a central role in providing services for people presenting with various musculoskeletal conditions, including LBP.¹⁶

Multiple factors can affect the development and implementation of inter-professional practices. D'Amour, Sicotte, and Lévy¹⁷ identified three main categories of determinants of inter-professional collaboration: interactional determinants among professionals, organizational determinants, and determinants related to the professional system. Reeves and colleagues¹⁸ proposed another frame-

work, one in which relational, process, organizational, and contextual factors all influence inter-professional teamwork in an interrelated manner. Gaining a better understanding of the factors associated with inter-professional practices helps to identify targets for improving such practices when they are relevant.¹⁹ Factors associated with inter-professional practices in the private PT sector have received little attention.²⁰

The importance of LBP as a public health problem, as well as the paucity of research on the inter-professional practices of physiotherapists, justified the need for this study, particularly because people with LBP often seek treatment in the private sector. This study will help advance the knowledge relating to the organization and quality of PT services. This study aimed to (1) describe the inter-professional practices of physiotherapists working in the private sector with people with LBP and (2) identify organizational and provider-level variables associated with the intensity of physiotherapists' inter-professional practices.

METHODS

Study design

This was a cross-sectional survey.²¹ It was the second part of a mixed-methods study that started with a qualitative descriptive study of private-sector physiotherapists' inter-professional practices.²² The previous study explored the diverse conceptualizations of physiotherapists regarding inter-professional practices, perceived obstacles and facilitators, and effects. The results of this study were used to help construct the current survey. To ensure high participation, physiotherapists could take part in the current study in one of three ways: completing an Internet questionnaire, doing a telephone interview, and completing a paper questionnaire.²³ The Ethics Committee of the Institut de réadaptation en déficience physique de Québec approved the study (no. 2010-190), and the study conformed to the Human and Animal Rights requirements of the February 2006 International Committee of Medical Journal Editors' Uniform Requirements for Manuscripts Submitted to Biomedical Journals.

Selection of participants

Physiotherapists working in the second most densely populated province of Canada—Quebec—were selected using simple random sampling. The Ordre professionnel de la physiothérapie du Québec (OPPQ) provided a list of all physiotherapist members (membership being mandatory to practise; $n = 1,566$) who worked in the private

sector and had agreed to be contacted for research purposes on their membership renewal form ($n = 996$). To be included in the study, physiotherapists on this list had to (1) work clinically at least 1 day per week, (2) work with a clientele consisting of at least 20% persons with LBP, (3) have been practising in the same workplace for at least 3 months, and (4) treat mainly adults. Physiotherapists off work at the time of the study (e.g., on maternity leave) were excluded.

Recruitment procedure and data collection

We contacted potential participants by phone to tell them about the study and verify their eligibility. Depending on their preference, we then either (1) sent an email message to interested participants that included an Internet link, directing them to the information sheet for the study and, if they consented to participate, to the online questionnaire, or (2) called them back at their convenience. In the latter case, we planned a subsequent call during which we read them the information sheet and consent form and, if they consented, carried out the telephone interview. We sent those participants who preferred to complete the questionnaire online a reminder email if it had not been completed after 1 week; 2 weeks later, we followed up with a second reminder by telephone, if needed. We also provided paper copies of the study documentation and questionnaire to anyone who requested them.

Main variables and survey instrument

This study examined inter-professional practices in the context of private-sector PT, in which formal team processes are infrequent;²² as a result, we viewed inter-professional practices as encompassing all forms of interaction between physiotherapists and other providers (e.g., not just team based) regarding patient care within and among other disciplines and organizations.^{20,22}

The survey questionnaire included 69 questions covering physiotherapists' (1) socio-demographic and professional characteristics (11 questions); (2) inter-professional practices, including the intensity of physiotherapists' inter-professional practices and questions about perceptions of inter-professional practices (37 questions); and (3) characteristics of their main workplace—organizational vision, resources, structures, and practices²⁴ (21 questions). The three phases of questionnaire testing described by Campanelli²⁵ (development, pretesting, and general rehearsal) guided the construction of the questionnaire. We developed the bank of items on the basis of the qualitative phase of the study,²² the scientific literature, the study objectives, and framework, as well as consultation with experts in inter-professional practices, practising physiotherapists, and members of the research team. Certain items were adapted from questionnaires already available on PT practice in Quebec or elsewhere and, for practical reasons, we first assessed questionnaires that used Canadian French.^{26,27} We used informal tests,

consultation of experts, and respondent debriefing for pretesting. These methods led to four rounds of questionnaire testing.²⁵ We carried out rehearsals (pilot testing) of the online and telephone administrations of the questionnaire with four and three physiotherapists, respectively, who were not part of the study sample.

We measured the intensity of physiotherapists' inter-professional practices, the main outcome variable, using the Intensity of Interprofessional Practices Questionnaire for Private Sector Physiotherapists (IIPQ-PT).²⁸ The IIPQ-PT is an adaptation of another questionnaire measuring collaboration,²⁷ one of a few that have been developed to assess the intensity of collaboration.²⁹ It includes 12 items, such as "To what extent are your clinical activities coordinated with other providers?" and "To what extent do you take into consideration data collected by other providers?" It has demonstrated good test-retest reliability (intra-class correlation coefficient = 0.69) and internal consistency.²⁸ Each item is answered on a scale ranging from 0 to 10, and the overall score is calculated as the arithmetic mean of the 12 scores; higher scores indicate a higher intensity of inter-professional practices. Candidate independent variables were characteristics of the providers and the organizations, for which most data were collected using the questionnaire.

In addition to the variables measured in the questionnaire, we documented three other variables: (1) rural or urban³⁰ location of the workplace (urban $\geq 10,000$ inhabitants, rural $< 10,000$ inhabitants³¹); (2) the organization number, used to identify physiotherapists who worked in the same organization; and (3) organizational model, a variable derived from an empirical classification of the workplaces.³² To increase data security, we integrated the questionnaire into the professional version of the SurveyMonkey online survey platform (<https://www.surveymonkey.com>).

Data analyses and sample size

We downloaded the data into Excel and SPSS spreadsheets and identified missing and extreme values. We computed descriptive statistics to synthesize physiotherapists' characteristics and inter-professional practices. Age, sex, mother tongue, years since OPPQ registration, urban or rural location of workplace, and affiliation with workplace were available for the whole population. We compared these variables between participants and eligible non-participants, as well as between participants and the rest of the population (non-identifying data were provided by the OPPQ), using independent t and χ^2 tests.

We carried out bivariate analyses followed by multiple regression analyses to identify candidate-independent provider-level and organizational variables associated with the IIPQ-PT score (dependant variable). We set the significance level at $p \leq 0.10$ for model entry and $p \leq 0.05$ to remain in the model. We entered all significant candidate-independent variables in bivariate analyses

at once, and then we removed non-significant variables one at a time until all of the remaining independent variables were statistically significant.

Next, we attempted to re-enter each candidate-independent variable that had been removed. We took into account possible correlations among the data of physiotherapists working in the same organization and corrected variances accordingly, using generalized estimating equations. We used generalized linear models with an identity link and a Gaussian error distribution for these analyses (SAS GENMOD procedure); this amounts to linear regression models. When five or more values per variable were missing, we created a separate category for missing values; otherwise, we excluded the missing cases from the analyses. We examined normality of residual plots, homogeneity of variances, and linearity of continuous variables for each model. To avoid collinearity, we constructed a composite variable representing type of clientele with LBP based on the following variables for coverage of services: percentage of clientele with LBP covered by workers' compensation, automobile insurance, private insurance, client (no insurance), or other coverage. All statistical tests were bilateral, with a significance level of 5%. We used SPSS version 18 (SPSS Inc., Chicago) and SAS version 9.2 (SAS Institute, Cary NC) to conduct analyses.

We estimated the sample size at 309 participants, based on a 0.5 SD for the IIPQ-PT (using an estimate from a previous study using a similar variable³⁶), an effect size of 0.4 (i.e., a difference of 0.20 in IIPQ-PT score), group weights of 20% and 80% for a hypothetical difference between IIPQ-PT score means of two groups, an alpha level of 5%, and a statistical power of 80%; this is the approach recommended by Hulley and colleagues.³⁷

RESULTS

Study sample

The results of the recruitment procedure are shown in Figure 1. A total of 542 physiotherapists were contacted ($542/609 = 89.0\%$), and 327 participated in this study. They practised in 243 different workplaces. We were unable to reach 67 physiotherapists either because we had the wrong telephone number or because they had changed jobs and were untraceable ($n = 18$), numerous calls were not answered, or our calls were not returned ($n = 49$). A total of 43 physiotherapists refused to participate. The main reasons given for refusing to participate were lack of time or lack of interest. At the time of recruitment, 91 physiotherapists were ineligible, and 15 were excluded from analyses post hoc because fewer than 20% of their clientele had LBP.

The proportion of final participation was 67.7%, which was calculated by dividing the number of physiotherapists who had completed the questionnaire ($n = 327$) by the number of estimated eligible physiotherapists ($n = 483$).

We estimated the number of eligible physiotherapists by adding the number of confirmed eligible physiotherapists ($n = 420 - 15 = 405$) to the number of estimated eligible physiotherapists ($[(67 + 31) \times 79.3\% = 78]$) among those who had refused to participate ($n = 31$) or could not be reached ($n = 67$) before eligibility status could be determined, based on the proportion of eligible physiotherapists among those whose eligibility status was known ($405/511 = 79.3\%$). Participants and eligible non-participants did not differ (data not shown). However, there were statistically significant differences between the participants and the rest of the population of OPPQ members: The former were younger (mean age 37.3 [SD 9.8] y vs. 41.4 [SD 10.5] y), had been registered for less time (mean 14.4 [SD 9.6] y vs. 18.0 [SD 10.1] y), and had different affiliation proportions—employees (48.9% vs. 42.9%), owners or co-owners (34.3% vs. 33.9%), and self-employed or other (16.8% vs. 23.3%)—than the rest of the population.

Data collection lasted from July 2011 to January 2012. All but three physiotherapists completed the questionnaire online. Of the three who did not use the online option, one completed it over the telephone, one completed it on paper, and the third started it online and finished it on paper. It took about 30 minutes to complete the questionnaire, both online and over the telephone.

Characteristics of physiotherapists

Table 1 presents the socio-demographic and professional characteristics of participating physiotherapists. They were mainly women (63.3%), had completed a bachelor's degree as their entry-level PT qualification (92.0%), and had worked as a physiotherapist for 12.3 years. On average, people with LBP made up 38.5% of their clientele. Only a minority of physiotherapists (37.3%) reported having received training on interactions with other providers, and this training had taken place mainly during their entry-level PT training. Some participants (43.7%) had worked in a setting in which planned meetings to discuss clinical cases occurred. Most physiotherapists (84.7%) reported having social activities (e.g., lunch at workplace or elsewhere, Christmas party, or after-work drink) with providers from their workplace at least once a month or a few times a year, and this proportion was smaller regarding social activities with providers from outside their workplace (62.7%).

Characteristics of physiotherapists' inter-professional practices

Table 2 presents the characteristics of physiotherapists' inter-professional practices. The most frequently reported means of interaction with other providers were written messages (letters and forms) sent through their clients; face-to-face, unplanned discussions; oral messages transmitted by their clients; and faxed or mailed letters and forms. Physiotherapists had frequent interactions

Figure 1 Flow diagram of sampling and recruitment procedures.

* PT = physiotherapist

with other physiotherapists, family physicians, PT assistants, and occupational therapists; less frequent interactions with providers such as orthopaedists, osteopaths, and massage therapists; and infrequent interactions with psychologists, neurosurgeons, and chiropractors.

The physiotherapists had a mean intensity of inter-professional practices of 6.7/10 (SD 1.7) and had interactions with other providers for approximately half of their clients who consulted them for LBP (mean 47.0% [SD 27.7]).

Table 1 Socio-Demographic and Professional Characteristics of Physiotherapists ($n = 327$)

Variable	No. (%) of respondents	Mean (SD)	No. (%) of responses missing
Socio-demographic characteristics			
Gender			
Men	120 (36.7)		
Women	207 (63.3)		
Age, y (range 23.3–69.1)		37.3 (9.8)	
Mother tongue			
French	283 (86.5)		
English	26 (8.0)		
Other	18 (5.5)		
Past professional training and experience			
Highest level of education			
Bachelor's degree	261 (79.8)		
Certificate/micro-programme	10 (3.1)		
Master's degree	38 (11.6)		
Doctorate	1 (0.3)		
Other	17 (5.2)		
PT diploma			1 (0.3)
Bachelor's degree	301 (92.0)		
Master's degree	22 (6.7)		
Other	3 (0.9)		
Previous training on interactions with other providers			
No	195 (59.6)		
Yes, during PT diploma	94 (28.7)		
Yes, during postgraduate training	28 (8.6)		
Other training/don't remember	10 (3.1)		
Years of professional experience		12.3 (9.4)	
Years of professional experience working with persons with LBP		11.7 (8.9)	
Previous work in public sector	130 (39.8)		1 (0.3)
Previous work experience in organization where planned meetings to discuss clinical cases occurred	143 (43.7)		4 (1.2)
Current professional experience			
Years of work in current organization*		7.8 (6.8)	
Affiliation with organization			
Owner or co-owner	112 (34.3)		
Self-employed	35 (10.7)		
Employee	180 (55.0)		
Remuneration			11 (3.4)
Per patient (visit)	142 (43.4)		
Hourly salary	115 (35.2)		
Mixed (per patient + hourly)	34 (10.4)		
Other	25 (7.6)		
Simultaneously work in another organization	74 (22.6)		2 (0.6)
Hours worked in a usual week†		33.7 (8.4)	3 (0.9)
Patients seen (visits) in a usual week†		49.9 (17.4)	10 (3.1)
Nights worked after 6:00 p.m. in a usual week†		1.7 (1.2)	12 (3.7)
Percentage of clientele with LBP†		38.5 (13.5)	2 (0.6)
Percentage of clientele with LBP referred by physician†		41.3 (23.9)	1 (0.3)
Percentage of clientele with LBP with treatment covered by†			3 (0.9)
Workers' compensation		20.8 (17.7)	
Automobile insurance		9.0 (9.6)	
Private insurance		56.0 (23.1)	
Client (no insurance)		12.5 (10.6)	
Other		1.7 (4.1)	
Percentage of clientele according to stage of LBP†			2 (0.6)
Acute		33.9 (19.3)	
Sub-acute		33.2 (14.0)	
Chronic		32.9 (18.9)	
Main intervention approach for patients with LBP			1 (0.3)
Conventional‡	34 (10.4)		
Functional/exercises	47 (14.4)		
Mechanical (McKenzie/manual therapy)	190 (58.1)		
Osteopathic/global postural re-education	50 (15.3)		
Other	5 (1.5)		

Table 1 (continued)

Variable	No. (%) of respondents	Mean (SD)	No. (%) of responses missing
Contributed to teaching in physiotherapy†	28 (8.5)		5 (1.5)
Supervised physiotherapy training for future physiotherapists and/or physiotherapy assistants†	89 (27.2)		1 (0.3)
Frequency of participation in social activities with other providers			
From own workplace†			18 (5.5)
At least every month	119 (36.4)		
A few times	158 (48.3)		
Never/not applicable	32 (9.8)		
From outside workplace†			22 (6.7)
At least every month	18 (5.5)		
A few times	187 (57.2)		
Never/not applicable	100 (30.6)		

Note: Percentages may not total 100 because of rounding.

*In cases in which participants had more than one workplace, they were asked to respond regarding the main organization where they practised.

† In the previous 12 months.

‡ Includes, for example, electrotherapy, physical modalities, and soft tissue technique, based on a study of physiotherapists' practice patterns in Quebec.¹⁶

Variables associated with the intensity of inter-professional practices

Table 3 presents the variables that were statistically associated with the intensity of physiotherapists' inter-professional practices. Most variables were at the provider level, and they related to physiotherapists' clientele, their participation in social activities with other providers, the perceived effects of interactions, their beliefs regarding the need to interact with other providers for interventions for people with LBP, and their perceptions of the influence of their patients' precarious financial situations. Three organizational variables were statistically significant: organizational model, perceived importance of interactions between physiotherapists and other providers in the workplace, and provision of PT training in the workplace. The final regression model explained 48.7% of the variance of the intensity of inter-professional practices.

DISCUSSION

Although physiotherapists are expected to interact with other providers to offer high-quality health services, there is little evidence of their actual inter-professional practices,¹⁴ especially in the private sector. Studying physiotherapists' inter-professional practices in the context of the private sector is novel and crucial for two reasons: many people turn to this sector for care, and inter-professional practices may differ significantly from those in the public sector in how services are organized (e.g., resources and provision of care). This study provides a detailed picture of physiotherapists' inter-professional practices specifically in the private sector, and it identifies the variables associated with the intensity of such practices.

The current study shows that physiotherapists have relatively frequent interactions with certain providers

involved in interventions for people with LBP and less frequent interactions with others. In a rare study on the extent of physiotherapists' ($n = 761$) collaboration, Cleary¹⁴ found that physiotherapists most often collaborated with physicians, occupational therapists, and nurses and not often with chiropractors, athletic trainers, exercise physiologists, psychologists, or respiratory therapists. Even though physiotherapists in Cleary's study worked in the private and public sectors and with all types of clientele and although participation was lower (38.1%), some findings converge with those of the current study, such as the infrequent interactions between physiotherapists and psychologists. The importance of psychological factors in LBP has been clearly shown, especially when it is chronic.^{38–40} Physiotherapists' infrequent interactions with psychologists may be explained by the fact that some physiotherapists may be unaware of their potential benefit for people experiencing a pain-related condition, as reported in our qualitative study.²²

Inter-professional communication is one of the six competency domains of the National Interprofessional Competency Framework developed by the Canadian Interprofessional Health Collaborative.⁴¹ On the basis of this framework, physiotherapists are expected to communicate with other providers (and vice versa) "in a collaborative, responsive and responsible manner."^{41(p.11)} Participants in our study reported often asking their clients to transmit oral and written letters or notes to other providers. This means of interaction has some advantages for physiotherapists, such as ease of transmission. However, it may also present some disadvantages—for example, by possibly putting the clients in an uncomfortable situation or by limiting the possibility of reciprocal exchange when it would be relevant and ultimately useful for the clients. The role that clients

Table 2 Characteristics of Physiotherapists' Inter-Professional Practices Regarding Their Interventions with Adults with Low Back Pain ($n = 327$)

Variable	No. (%)					
	Every day	Every week	Every month	A few times	Never	Missing
Frequency of use of means of interaction*						
Telephone	3 (0.9)	43 (13.1)	54 (16.5)	187 (57.2)	33 (10.1)	7 (2.1)
Email	4 (1.2)	10 (3.1)	16 (4.9)	90 (27.5)	198 (60.6)	9 (2.8)
Letter or form sent through patient	31 (9.5)	149 (45.6)	82 (25.1)	53 (16.2)	3 (0.9)	9 (2.8)
Letter or form sent by fax or mail	8 (2.4)	68 (20.8)	62 (19.0)	117 (35.8)	63 (19.3)	9 (2.8)
Orally transmitted message through patient	21 (6.4)	58 (17.7)	60 (18.3)	134 (41.0)	42 (12.8)	12 (3.7)
Face-to-face unplanned discussion (e.g., in hallway)	42 (12.8)	95 (29.1)	43 (13.1)	72 (22.0)	68 (20.8)	7 (2.1)
Face-to-face planned meeting	1 (0.3)	40 (12.2)	36 (11.0)	73 (22.3)	170 (52.0)	7 (2.1)
Common evaluation or intervention	1 (0.3)	12 (3.7)	15 (4.6)	72 (22.0)	219 (67.0)	8 (2.4)
Frequency of interactions with*						
Acupuncturist	2 (0.6)	24 (7.3)	23 (7.0)	109 (33.3)	160 (48.9)	9 (2.8)
Chiropractor	0 (0.0)	1 (0.3)	4 (1.2)	69 (21.1)	242 (74.0)	11 (3.4)
Family physician	22 (6.7)	145 (44.3)	95 (29.1)	52 (15.9)	9 (2.8)	4 (1.2)
Kinesiologist	19 (5.8)	21 (6.4)	20 (6.1)	129 (39.4)	128 (39.1)	10 (3.1)
Massage therapist	10 (3.1)	45 (13.8)	58 (17.7)	131 (40.1)	74 (22.6)	9 (2.8)
Neurosurgeon	0 (0.0)	3 (0.9)	13 (4.0)	171 (52.3)	129 (39.4)	11 (3.4)
Occupational therapist	38 (11.6)	41 (12.5)	21 (6.4)	109 (33.3)	108 (33.0)	10 (3.1)
Orthopaedist	2 (0.6)	24 (7.3)	99 (30.3)	141 (43.1)	53 (16.2)	8 (2.4)
Osteopath	14 (4.3)	41 (12.5)	46 (14.1)	130 (39.8)	85 (26.0)	11 (3.4)
Physiotherapist	76 (23.2)	96 (29.4)	49 (15.0)	84 (25.7)	15 (4.6)	7 (2.1)
Physiotherapy assistant	75 (22.9)	73 (22.3)	22 (6.7)	36 (11.0)	109 (33.3)	12 (3.7)
Psychologist	6 (1.8)	6 (1.8)	9 (2.8)	72 (22.0)	225 (68.8)	9 (2.8)
Sport physician	3 (0.9)	27 (8.3)	49 (15.0)	120 (36.7)	117 (35.8)	11 (3.4)
Other†			21 (6.4)			
			No. (%)	Mean (SD)	No. (%) missing	
Other selected characteristics						
Intensity of inter-professional practices‡,§				6.7 (1.7)	8 (2.4)	
Perceived degree of interactions with other providers§,¶				6.5 (2.3)	16 (4.9)	
Percentage of patients with low back pain for whom interactions took place§				47.0 (27.7)	16 (4.9)	
Location of providers with whom interactions most often took place§					14 (4.3)	
In workplace			160 (48.9)			
Outside workplace			61 (18.7)			
Outside workplace			61 (18.7)			
Equally in and outside workplace			92 (28.1)			
Main initiators of interactions					13 (4.0)	
Physiotherapist			181 (55.4)			
Other providers			3 (0.9)			
Equally physiotherapist and other providers			130 (39.8)			
Documentation of interactions					11 (3.4)	
Always			64 (19.6)			
Often			136 (41.6)			
Sometimes			101 (30.9)			
Never			15 (4.6)			

Note: Percentages may total more than 100 because of rounding.

*In the previous 12 months and regarding patients with low back pain.

† All frequencies of interaction or unspecified.

‡ Score obtained on the Intensity of Interprofessional Practices Questionnaire for Private Sector Physiotherapists.

§ In the previous 12 months.

¶ Score on a scale of 0 to 10, where 0 = "no interaction" and 10 = "the greatest interaction possible."

play in such interactions is also unclear, although a person seeking treatment should be at the heart of any inter-professional collaboration because patient-centred care is an essential competency domain of inter-professional collaboration.³ Are patients simply intermediaries in these interactions? Is their level of involvement

adequate? These questions merit further attention. Further studies are also warranted to specify the types of interaction to promote, who to involve, and their optimal timing and frequency.

Considerable effort has been made in Canada and elsewhere in recent years to integrate inter-professional

Table 3 Variables Independently Associated with the Intensity of Physiotherapists' Inter-professional Practices ($n = 312$)

Variable	Adjusted mean or slope*	95% CI	p-value
Type of clientele with LBP in terms of coverage for services			<0.001
Mostly private insurance	6.5	6.3, 6.7	
Mostly another type	7.3	6.6, 8.0	
Mix of two types	6.5	6.0, 7.0	
Multiple types	7.0	6.8, 7.2	
Percentage of clientele with LBP in chronic stage			<0.001
<25	7.1	6.9, 7.3	
25–50	6.5	6.3, 6.7	
≥50	6.6	6.3, 6.9	
Degree of satisfaction regarding interactions with physiotherapy assistants			0.031
Satisfied	6.9	6.7, 7.1	
Neutral†/dissatisfied	6.6	6.3, 6.8	
Belief that interactions with other providers are needed to adequately intervene with clientele with LBP			<0.001
Agreed	7.1	6.9, 7.2	
Neutral‡	6.5	6.2, 6.9	
Disagreed	5.9	5.5, 6.3	
Perception that interactions improve the response to patients' bio-psychosocial needs			0.043
Agreed	6.8	6.7, 7.0	
Neutral‡	6.3	6.0, 6.7	
Disagreed	6.5	5.6, 7.3	
Perception that interactions improve physiotherapist's work satisfaction			0.049
Agreed	6.8	6.6, 6.9	
Neutral‡	6.8	6.5, 7.1	
Disagreed	5.3	4.4, 6.2	
Perception regarding the influence of patients' precarious financial situation			0.009
Facilitator	7.3	6.9, 7.7	
Neutral§	6.5	6.3, 6.7	
Obstacle	6.9	6.7, 7.0	
Frequency of participation in social activities with providers from own organization¶			0.035
At least every month	6.6	6.4, 6.8	
A few times	7.0	6.8, 7.2	
Never	6.5	5.9, 7.1	
Frequency of participation in social activities with providers from outside organization¶			0.017
At least every month	7.1	6.6, 7.7	
A few times	6.9	6.7, 7.0	
Never	6.4	6.2, 6.7	
Perception regarding the importance of interactions between physiotherapists and other providers in organization**	0.186††	0.097, 0.274	<0.001
Organizational model of workplace			0.024
Solo	6.9	6.7, 7.1	
Middle-scale multidisciplinary	6.7	6.5, 6.9	
Large-scale multidisciplinary	6.2	5.9, 6.6	
Mixed	6.8	6.2, 7.3	
Workplace provided physiotherapy training‡‡			0.004
No	6.5	6.2, 6.7	
Yes, for future physiotherapy assistants	6.9	6.5, 7.2	
Yes, for future physiotherapists	7.0	6.8, 7.2	
Yes, for both	7.1	6.7, 7.5	
Total $R^2 = 48.7\%$			

*Adjusted mean score on the IIPQ-PT reported for categorical variables; slope reported for continuous variable.

† Neither satisfied nor dissatisfied.

‡ Neither in agreement nor in disagreement.

§ Neither facilitator nor obstacle.

¶ In the previous 12 months.

** Score on a scale of 0 to 10, where 0 = "no interaction" and 10 = "the greatest interaction possible."

†† Unstandardized slope coefficient indicating the amount of change in the IIPQ-PT score associated with a 1-unit change for this variable.

‡‡ Offered clinical placements.

IIPQ-PT = Intensity of Interprofessional Practices Questionnaire for Private Sector Physiotherapists; LBP = low back pain.

education and practice into system-wide practices. Our findings, that only a minority of physiotherapists reported having received any inter-professional training, show that continued efforts to further inter-professional education and practice initiatives are still necessary in PT training programmes but also in the postgraduate training of practising clinicians. This training should address not only essential competencies but also less frequently discussed subjects, such as the importance of documenting inter-professional practices. Lack of documentation of these practices may indicate that they are not perceived as valuable professional practices.

We found that the variables associated with the intensity of physiotherapists' inter-professional practices were related to the physiotherapists themselves as well as to their workplace. Hence, these variables represent potential targets for action to improve such practices. According to the World Confederation for Physical Therapy, physiotherapists should "have policies and procedures in place to ensure communication with their patients'/clients' medical practitioners and other relevant professionals."^{8(p.1)} The frequency of physiotherapists' participation in social activities was related to the intensity of their inter-professional practices; thus, increasing their participation in social activities in work-related contexts may create positive relationships that support inter-professional practices. The finding that physiotherapists' perceptions of the positive effects of inter-professional practices were associated with the intensity of such practices suggests that having positive interactions possibly serves as a reinforcing factor, influencing them to have further interactions. In addition to examining provider-level variables, we found that organizational variables—namely, organizational models, vision, and provision of PT training—are also important to consider and may support or hinder inter-professional practices. The importance of organizational characteristics for inter-professional collaboration has also been highlighted in other studies.^{2,42}

STRENGTHS AND LIMITATIONS

One strength of this study is the high participation of eligible physiotherapists, which may have been a result of the personalized recruitment procedure and recall methods we used. One weakness, however, is that the study relied on self-report and was subject to social desirability bias. Although it was possible to take into account the correlation between data from physiotherapists from the same workplace, there might also have been a correlation between physiotherapists belonging to the same network of organizations; it was not possible to trace this information. Access to certain characteristics of the physiotherapists who did not participate in this study allowed us to check selection bias. Even if there were some significant differences between participants

and the rest of the population, the variables that were different were not associated with the intensity of inter-professional practices. Also, it is possible that we omitted some important variables that are associated with the intensity of physiotherapists' inter-professional practices (e.g., organizational culture, patient expectations), resulting in underestimation of the proportion of variance explained. Our study relied on a wide definition of inter-professional practices that includes a wide array of processes, not just formal, team-based processes. Although this study allowed us to document less traditionally explored processes, adopting such a wide definition has its limits.

The results of this study are derived from PT practice in Canada, but its findings may possibly be generalized to similar contexts in other countries because private-sector PT is common around the world.⁴³ Nonetheless, further research is needed. Conducting case studies using field observation could provide complementary data and help to further explore the processes involved when physiotherapists interact with other providers. Further examination of the most appropriate means of interacting with other providers also needs further study.

In addition, although we investigated the involvement of physiotherapists in interactions such as transmitting letters, we did not examine the actual receipt of communications or any actions taken after these communications. Moreover, the positive effects of inter-professional practices have mostly been identified on theoretical grounds.⁴⁴ Future studies looking at the actual influences of physiotherapists' inter-professional practices on outcomes such as care-seeking behaviour and clinical outcomes of clients, or on personnel retention and work satisfaction, would provide important complementary knowledge. These aspects are also understudied in the more general field of inter-professional practices and collaboration.

CONCLUSION

In an era in which inter-professional practices are promoted in health systems everywhere, this study provides some answers regarding the who, how, and when of private-sector physiotherapists' inter-professional practices as well as the variables associated with the intensity of such practices. The results suggest that there is probably room to improve physiotherapists' inter-professional practices regarding their interventions with adults with LBP—for example, frequency and types of interaction. Furthermore, because these findings highlight multiple sources of influence on the inter-professional practices of physiotherapists, simply targeting their perceptions and behaviours, with the goal of increasing their interactions with other providers, will likely not be sufficient. Other context-specific, organization-level factors need to be taken into account and acted on.

KEY MESSAGES

What is already known on this topic

Inter-professional practices have been highly promoted in health care systems everywhere as well as in research in the area of managing LBP. Previous research examining physiotherapists' inter-professional practices has mostly been undertaken in contexts in which formal teamwork often exists, such as hospitals and rehabilitation centres.

What this study adds

This study is innovative because it provides an understanding of physiotherapists' inter-professional practices in the private sector, where these practices are less formalized. Our results show that physiotherapists have frequent interactions with several different providers regarding their patients with LBP, such as other physiotherapists, PT assistants, and physicians; these interactions often include asking patients to relay written or oral messages for them. Increasing physiotherapists' interactions with other providers in the private sector requires changes at both the provider and the workplace level.

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